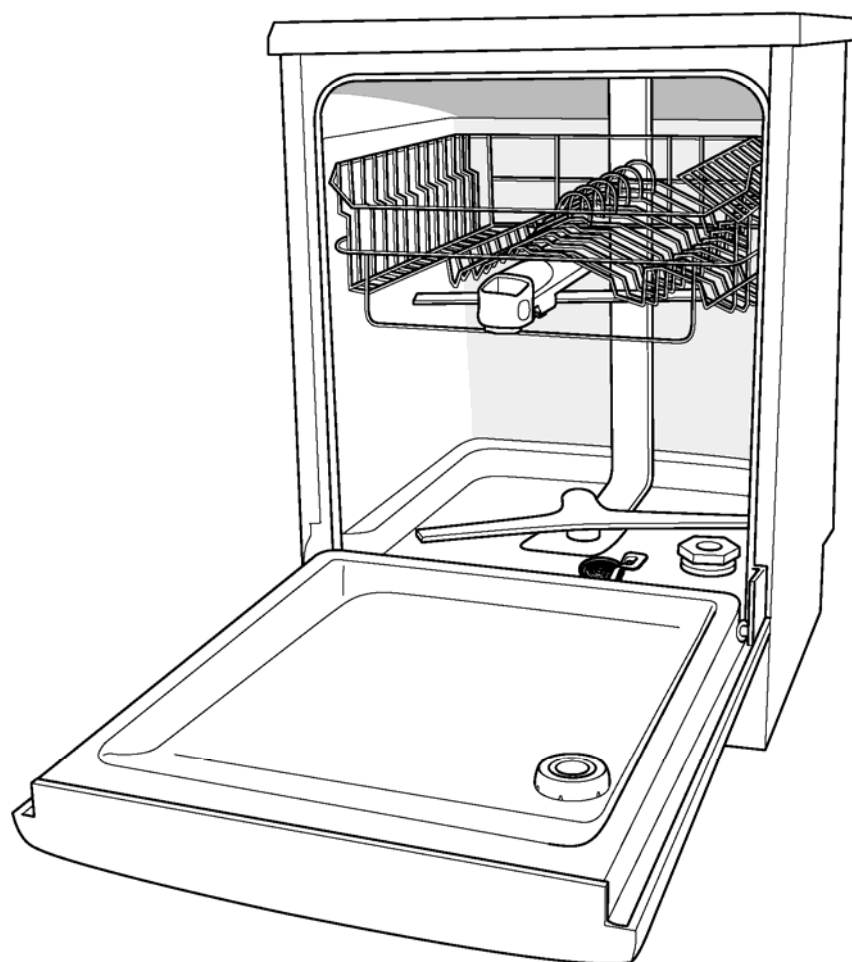
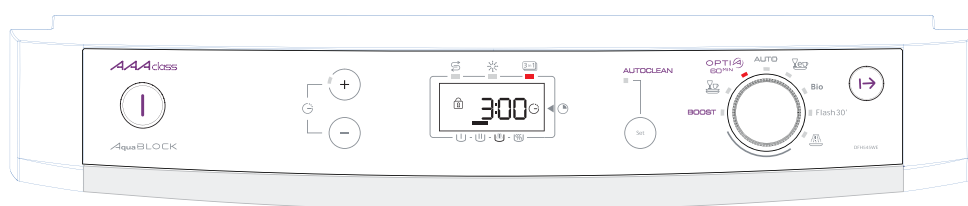


# HERAKLES

## Dishwashers



**FAGOR**  **BRANDT**

A FAGOR GROUP COMPANY



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## 1 - THE ENERGY LABEL

### 1.1. - What you must know


Washing machine, dryer and dishwasher are three appliances likely to weigh heavy on the electricity invoice if you choose model poorly classified from the energetic point of view. Washing machine and dishwasher each consume about 250 kWh a year. For a few years, the manufacturers have made efforts on the water consumption, which has a direct effect on the power consumption at the moment of the heating.

Initiated by the European Community, this labelling is now compulsory in France for most household electrical appliances. The classification from **A** (the most economical) to **G** (the most avid on electricity), enables the consumer to locate at a glance, the various models proposed.

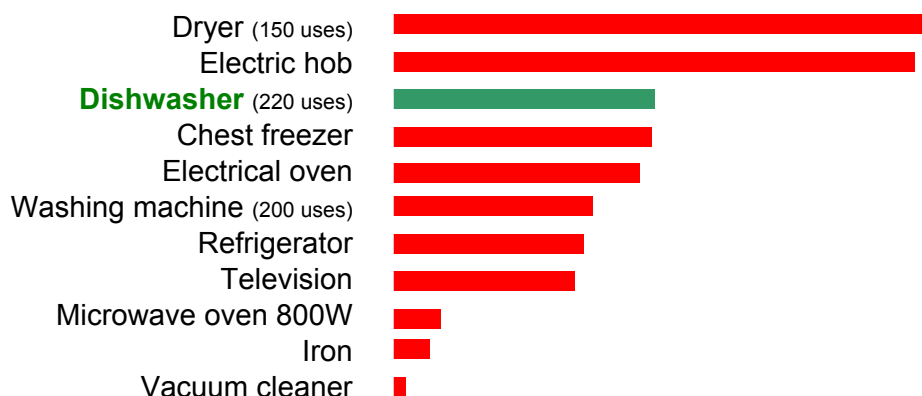
For washing machines, an additional indication concerning the wash and spin, complements the information concerning the power consumed.

This mention must appear compulsorily on all the dishwashers marketed from the 1<sup>st</sup> of January 2000.

The “Bio” program is selected to laboratory tests.

Energy		Dishwasher
Manufacturer		<b>LOGO</b>
Model		A B C 1 2 3
More efficient		
<b>A</b>		<b>A</b>
<b>B</b>		
<b>C</b>		
<b>D</b>		
<b>E</b>		
<b>F</b>		
<b>G</b>		
Less efficient		
Energy consumption kWh/cycle (In accordance with programme recommended by the manufacturer) <small>Actual energy consumption will depend on how the appliance is used</small>		0,75
Washing performance <small>A: higher □ G: lower</small>		A B C D E F G
Drying performance <small>A: higher □ G: lower</small>		A B C D E F G
Capacity (place settings)		12
Water consumption		12
Noise (dB(A) re 1 pW)		45
Further information is contained in product brochures		
<small>Norm EN 60456 Dishwasher label Directive</small>		

### 1.2. - Consumption level of the main appliances\*



**A good use of the deferred start causes you to benefit by off-peak periods and, therefore, to save electricity.**

## 2 - THE DISHWASHER

### 2.1. - The customer's expectations

- Perfectly clean dishes
- Dry dishes
- Sparkle of glasses and stainless steel
- Respect of delicate dishes
- Rapidity
- Easy to use
- Low sound level
- Low consumption (water, electricity and products)



### 2.2. - The advantages of the dishwasher

A family of four persons devotes 55 minutes a day on average to do dishes, against 20 minutes when it has a dishwasher.

The cost of a dishwasher is written off in only 3 years and its estimated lifetime is approximately 10 years. Washing up in machine is much more hygienic because dishes are perfectly washed and dried without contact with external elements (towels, hands or work surface), which often convey a number of bacteria.

HERAKLES	0.25 €	DISHES DONE BY HAND	0.88 €
Water (12 liters)	0.03 €	Water (70 liters)	0.18 €
Energy (0.75 kWh)	0.08 €	Energy (4.8 kWh)	0.53 €
Detergent product	0.10 €	Detergent	0.14 €
Rinsing product	0.01 €	Accessories	0.03 €
Salt	0.03 €		
<b>Annual cost</b>	<b>91.25 €</b>	<b>Annual cost</b>	<b>321.20 €</b>

### 2.3. - The sound level

Noise remains a selection criterion essential despite the fact that indicating it on the "Energy Label" is not compulsory.

For the HERAKLES dishwasher, the level is comprised between 41 and 50 decibels (dB). It must be known that a variation by 3 decibels multiplies by two the sound volume and this is only below 50 decibels that the dishwasher can be operated late at night.

To achieve this result, several improvements have been made to the ATLANTIS dishwasher:

- PTC and double auxiliary winding for certain asynchronous cycling pumps
- Reinforced acoustics (double-thickness bitumen, felts, phonic seals)
- Passage of the entire spraying circuit in the tank.

### 2.4. - The drying

The drying result is an important point that appears on the "Energy Label".

The HERAKLES dishwasher proposes 3 marks for the drying (A/B/C), according to the dishwasher level of equipment.

## 2.5. - Operating principle

Dirt adheres to dishes with a certain energy that is to be overcome to get rid of it. It is, therefore, necessary to implement the following actions:

### ➤ The mechanical action (aspersion)

Its purpose is to project the detergent bath onto dishes to remove and drag the dirt. The ATLANTIS dishwasher is provided with 4 spraying levels:

- Two that spray the lower and upper baskets
- A third one, multidirectional (small shower) attached to the tank ceiling prevents residues from depositing on the tank ceiling and falling during drying
- A fourth one, carried out using a rotary nozzle assembled to the lower winch in certain models, is used to better clean the bottom of saucepans (it is associated to a specific program).

Spraying the dishes is performed by the winches, which turn simultaneously or not (alternate spraying) under action of the water pressure in spraying nozzles. The water thus projected onto dishes falls in the tank bottom where it is purified by flowing through four filters. These filters perform continuous recycling of the detergent solution until cycle end.

The water is then returned, pressurized, by the circulation pump (approximately 50 liters / minute) into the spraying arms. Such a circulation and the low volume of the cycling unit volume (1.85 liters) are used to have a total water consumption relatively low (12 liters), as each piece of dishes is washed by only one volume of water (approximately 4 liters).

After wash, the wastewater is evacuated, the clear water, cold for the first rinse rinses dishes, and then a second rinse, hot, precedes the drying.

### ➤ The thermal action

The progressive temperature rise and the achievement of an enzymatic dwell at 50°C are used to obtain the best conditions of elimination of all the types of dirt. Actually, the action of the various components of detergent products varies according to the bath temperature.

### ➤ The chemical action

When dishes are done in machine, the mechanical action is limited (as compared with dishes done by hand), and must therefore be compensated for by a more powerful chemical action.

To the mechanical and thermal energy of the machine are added the physical-chemical and biological actions of the detergent.

As the nature of dirt is very varied, it is not always eliminated in the same way.

This is the reason why detergents contain very different components and, in particular, enzymes.

### ➤ The duration.

All is not as simple. If we detail the operation, we remark that an essential element is missing: the water. Actually, without water, there is no wash! The water will, with the support of active principles of the detergent, destroy, eradicate, dissolve and emulsify the dirt present on dishes. It will do so all the better since the machine will water the dishes and heat the water.

The wash result depends, therefore, simultaneously on 4 factors:

- **The washing product**
- **The water**
- **The temperature**
- **The mechanics**

A good wash result can, therefore, only be obtained if all these conditions are respected.



Spraying arms project onto dishes (**mechanical action**) a solution of detergent products (**chemical action**) progressively heated by a resistor (**thermal action**)

### 3 - WATER

#### 3.1. - The noxious effects of limestone

Any water contains traces of minerals, mainly limestone, magnesium and iron originating from the ground. The higher the content is, the harder the water is. These minerals reinforce the dirt catch to fabric fibers, and the eliminated one tends to be fastened again to them. Limestone reduces the efficiency of the washing product, makes the laundry rough, makes whites turn grey, fades colors and accelerates the laundry wear.

#### 3.2. - The water softening: a vital function

The system water contains soluble calcium hydrogen carbonate. Hot, the calcium hydrogen carbonate decomposes and gives insoluble calcium carbonate (fur).

The water softening is, therefore, a vital function.

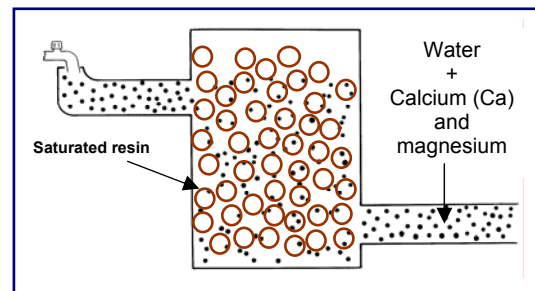
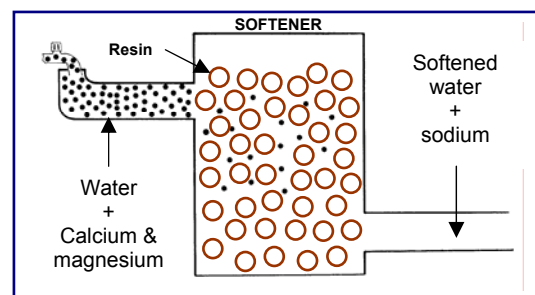
This is the reason why all dishwashers are fitted, from the origin, with water softeners.

Softening is, in fact, the substitution of calcium ions contained in the system water by sodium ions contained in the salt.

To perform this substitution, the water is circulated in the heart of the softener that contains small balls of synthetic resin.

Combined with sodium, this resin sets the limestone particles (calcium or magnesium) contained in the system water. To do so, the resin exchanges its sodium ions for the calcium ions.

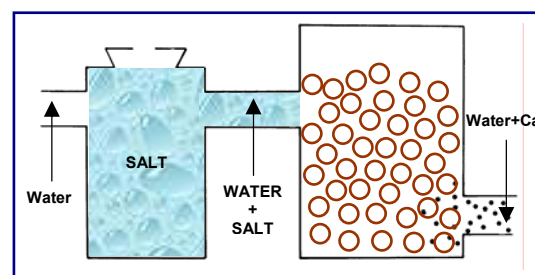
After a certain number of fillings, resins are more or less saturated with limestone and start becoming ineffective to soften the water. It is then necessary to regenerate them.



#### 3.3. - The regeneration

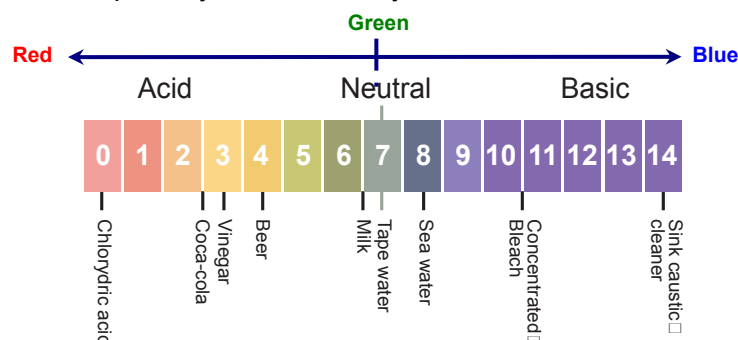
To regenerate the resins, it is necessary to eliminate the limestone from them with sodium (salt).

This regeneration, automatic and "floating" on "all electronic" ATLANTIS dishwashers, is initiated by the board according to the adjustment performed on the putting into service and to the number of filling baths already performed.



### 3.4. - The pH (hydrogen potential)

Maybe, you have already remarked on labels of cleaning products or drinks the pH indication followed by a number. Maybe, you know that the pH is related to the acidity of a solution, sometimes verifiable by its taste. If you taste successively lemon juice, coffee and water, you will be able without any difficulty to rank these three liquids by level of acidity.



The pH paper is used for approximate, simple and rapid determination of the pH of a solution. This paper, which does not provide exact determination of a value of pH, rather gives an idea of the pH range of the solution, namely:

- Acid for a pH smaller than 7
- Neutral for a pH equal to 7
- Basic or alkaline for a pH greater than 7

Water, mineralized or not (and, therefore, salt water) has a pH very close to 7.

#### 3.4.1. - A few acids

- Vinegar (acetic acid)
- Aspirin (acetylsalicylic acid)
- Lemon guise (citric acid)
- Coffee
- Vitamin C (ascorbic acid)
- Dishwasher rinsing product

#### 3.4.2. - A few bases

- Household cleaning products (ammonia)
- Soap (potassium hydroxide)
- Concentrated bleach
- Sink caustic cleaner (sodium hydroxide)
- Detergent products for washing machine and dishwasher

Alkaline pH is necessary for the washing bath to ensure maximum efficiency.

#### 3.4.3. - Analysis of traces or deposits on dishes

Replacing a component supposed defective does not constitute the essentials of the maintenance of a dishwasher. A dishwasher, for which the consumer signals a bad wash result, cannot be repaired so easily. Actually, to solve this type of claim, it will always be necessary to precisely identify the nature of the trace or residue present on the piece of dishes. Only this precise identification can indicate us the probable cause at the origin of the defect.

The matter is not to precisely measure the pH but simply to detect the origin of the white traces or of the residues.

So, when the paper turns red we are in the presence of an acid solution (rinsing product for example), if it turns blue, then it is an alkaline solution (washing product).



## **4 - THE DETERGENTS**

### **4.1. - The products**

#### **4.1.1. - The detergents**

Contrary to many received ideas, all detergents are not identical. They contain specific ingredients. So each type of detergent has its own features and will be particularly suited to such or such type of wash or of dishes.

- Detergent products are alkaline.
- They have, therefore, a pH comprised between 9 and 11.
- They are classified IRRITATING.



##### ➤ **The powder**

It is perfectly efficient under difficult wash conditions (very hard water or very dirty dishes) and is suitable for washing silver and decorated glasses.

##### ➤ **The tabs**

The dosage ease certainly explains the development of their market share. The dissolution time can vary from 10 seconds to over 10 minutes. When selecting a fast or short program, it's better to use powder.

##### ➤ **The liquids**

It is particularly more suitable for fragile dishes and respects the decoration.

#### **4.1.2. - The rinsing product**

It enables water to flow more rapidly and more completely from dishes, so preventing the formation of traces during drying. It neutralizes alkaline residues of the detergent during the final rinse and favours the drying of dishes. Its acid pH is comprised between 1 and 3. It must be compatible with the detergent (it is preferable to keep the same product trademark).

#### **4.1.3. - The regenerating salt**

It is used to regularly regenerate the water softener resins. It protects the appliance and dishes from layers of sediment. Its pH is neutral and equal to 7.

#### **4.1.4. - The "all-in-one" products**

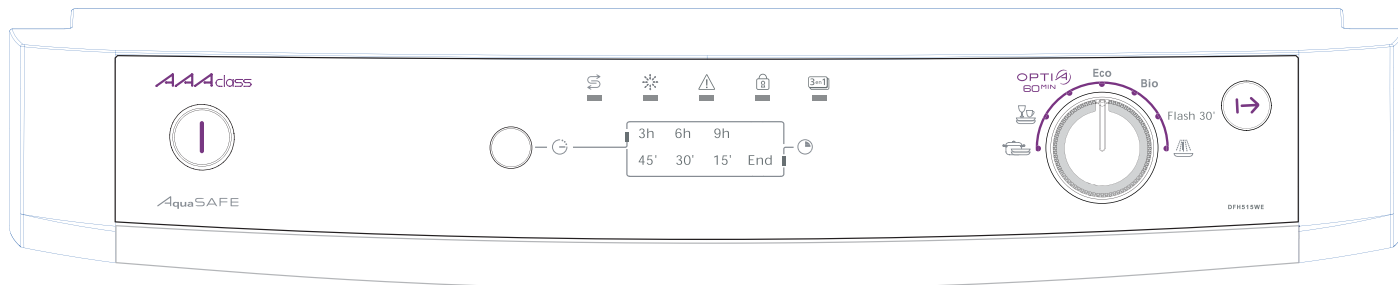
New products integrate in one and the same dose the 3 functions essential to the right operation of the dishwasher:

- The wash function
- The salt function
- The rinse function

In cases of hard and very hard water (hardness greater than 35°TH), it is indispensable to use regenerating salt. Some manufacturers specify that the wash must be done at 50°C maximum under penalty of freeing too early the various actions of the product and altering the final result, or even damaging some pieces of dishes.

## 5 - HERAKLES PROGRAMMINGS

### 5.1. - Multi-LED display (E1)



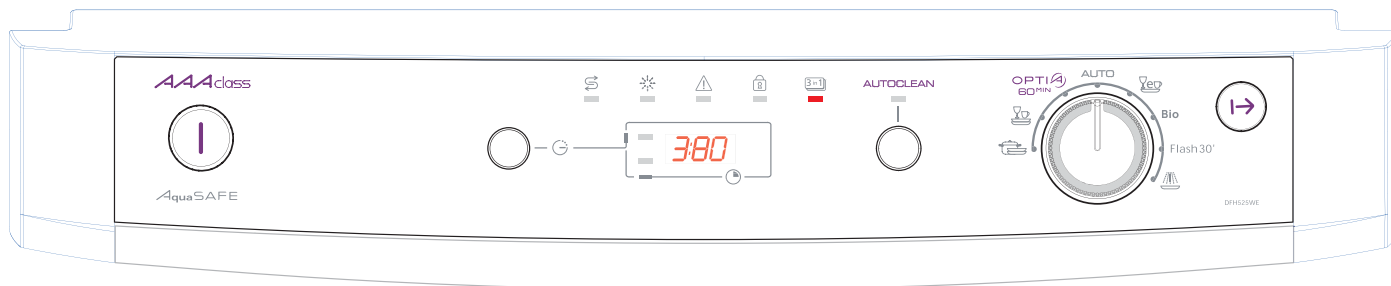
#### ➤ Features

- **Pushbutton:** On / Off
- **Micro-travel buttons:**
  - Deferred start  
This button is also used for adjusting the water softener (display by LEDs)
  - Start / Cancel
- **Program selector knob:**
  - Intensive
  - Normal
  - OptiA 60 minutes
  - Eco
  - Bio (Energy label cycle)
  - Flash 30'
  - Soaking
- **Indicator lights:**
  - Lack of salt (possible to actuate or not this indicator light)
  - Lack of rinsing liquid (possible to actuate or not this indicator light)
  - Alarms
  - Access locking
  - "3 in 1" tablets (possible to actuate or not this indicator light)
  - Display of the remaining time (45' → 30' → 15' → END)
  - Deferred start, 3, 6 and 9 hours
- **Anti-leak float**

#### ➤ Performance

- **"Energy Label" marks**
  - Energy : **A**
  - Washing : **A**
  - Drying : **A** (Condenser)
- **Consumption for the standardized cycle (" BIO " program with 12 place settings)**
  - Water : **16 litres**
  - Electricity : **1.05 kWh**
  - Time : **145 minutes**

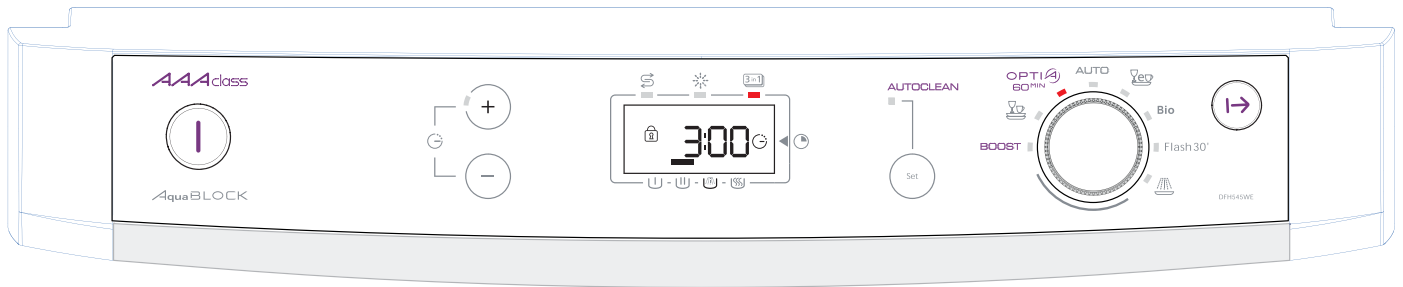
## 5.2. - 3-digit display ( E2)



### ➤ Features

- **Pushbutton:** On / Off
  - **Micro-travel buttons:**
    - Deferred start  
This button is also used for adjusting the water softener (2-digit display)
    - AQUACLEAN program (Dishwasher cleaning cycle)
    - Start / Cancel
  - **Program selector:**
    - Intensive
    - Normal
    - OptiA 60 minutes
    - AUTO
    - Eco
    - Bio
    - Flash 30'
    - Soaking
  - **Indicator lights:**
    - Lack of salt (possible to actuate or not this indicator light)
    - Lack of rinsing liquid (possible to actuate or not this indicator light)
    - Alarms
    - Access locking
    - "3 in 1" tablets (possible to actuate or not this indicator light)
    - AQUACLEAN
  - **3-digit display unit:**
    - Display of the remaining time
    - Start deferred by 1 to 12 hours
    - Softener adjustment
  - **Anti-leak float**
- ### ➤ Performance
- **"Energy Label" marks**
    - Energy : **A**
    - Washing : **A**
    - Drying : **A** (Fan)
  - **Consumption for the standardized cycle (" BIO " program with 12 place settings)**
    - Water : **14 litres**
    - Electricity : **1.05 kWh**
    - Time : **140 minutes**

## 5.3. - LCD display(E4)

➤ **Features**

- **Capacitive keys:**
  - + / - for adjusting the deferred start
  - AQUACLEAN (Dishwasher cleaning cycle).  
This button is also used for accessing a dishwasher adjustment menu.
- **Micro-travel button:** Start (1 short actuation) / Cancel (1 actuation for two seconds)
- **Pushbutton:** On / Off
- **Buzzer**
- **Program selector:**
  - Cyclone (special program for sauce-pans on models fitted with arm with rotating nozzle)
  - Normal
  - OptiA 60 minutes
  - AUTO
  - Eco
  - Bio
  - Flash 30'
  - Soaking
- **Indicator lights:**
  - Lack of salt (possible to actuate or not this indicator light)
  - Lack of rinsing liquid (possible to actuate or not this indicator light)
  - "3 in 1" tablets (possible to actuate or not this indicator light)
  - AQUACLEAN and other programs
  - Deferred wash
- **LCD screen:**
  - Program run
  - Display of the current time
  - Display of the remaining time
  - Display of deferred-end time
  - Access locking
  - Alarms
  - Adjustment of the softener and "menu" mode (LCD brightness, "Beep" of end, language...)
- **Anti-leak float**
- **Aqua Stop pipe**

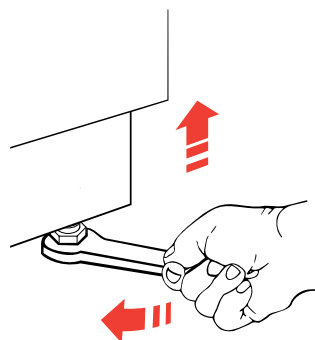
➤ **Performance**

- Best noise level: **45 dB(A)**
- **"Energy Label"**
  - Energy : **A**
  - Washing : **A**
  - Drying : **A (Fan)**
- **Consumption for the standardized cycle (" BIO " program with 12 place settings)**
  - Water : **12 litres**
  - Electricity : **1.05 kWh**
  - Time : **140 minutes**

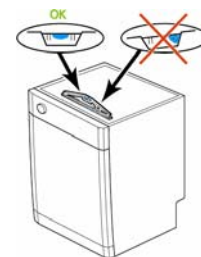
## 6 - GETTING STARTED AND USING THE HERAKLES DISHWASHER

### 6.1. - Installing and getting started

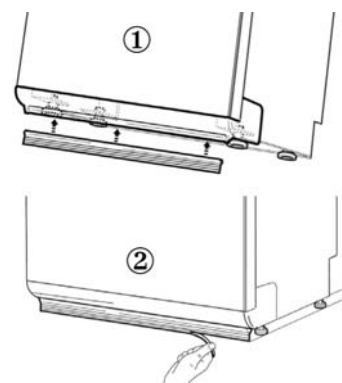
#### 6.1.1. - Levelling



Adjust the height of the four feet using a screwdriver so as to get incline smaller than 1 cm.



Install the soundproofing flap after adjusting its height (by cutting it) so that it touches the floor. Other soundproofing gaskets are also provided to be stuck between the appliance and the working surface or contiguous pieces of furniture.



#### 6.1.2. - Water inlet

Pipe length: 1.50 m maximum

Tap flow rate: 10 litres / minutes minimum



**CAUTION:** connection to self-piercing tap possible

If the opening diameter is 6 mm minimum and the flow rate is sufficient.

Diameter of the threaded fitting: 20/27

Pressure : from 1 to 10 bar

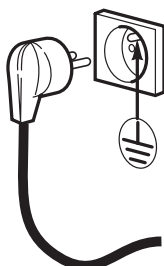
Hot-water connection :

The dishwasher can be fed with hot water (60°C maximum), this is used for decreasing the heating time and the cycle duration. This option is advantageous if hot water is very cheap (solar water heater) and if the pipe allows so (red marking).

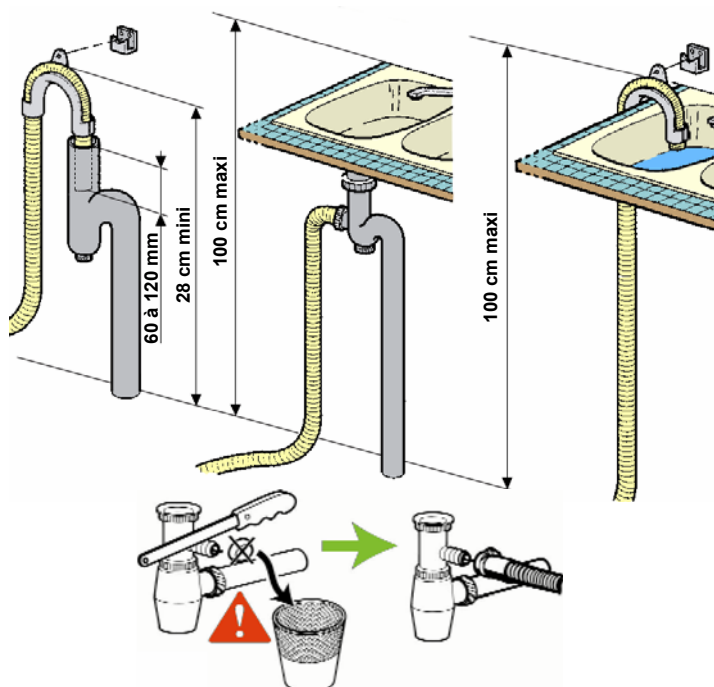
- **Simple pipe** reinforced or not.
- **Pipe with Aquastop:**
  - Electrical: the filling solenoid valve is built in the pipe. In the event where the pipe (protected by a sheath) is leaking, the water is directed to a float (in chassis bottom), which cuts off the power supply to solenoid valve and informs the electronics.
  - Mechanical: a mechanism, actuated by a sponge, blocks the water inlet if the pipe (protected by a sheath) happens to leak (it operates with the dishwasher powered on or off).

#### 6.1.3. - Electrical connection

The dishwasher must be connected to a wall outlet with ground connection. This wall outlet must be protected by a 10 A fuse and must remain accessible. No extensions, multiple sockets or electrical deferred programr must be used.



### 6.1.4. - Evacuation of waste waters



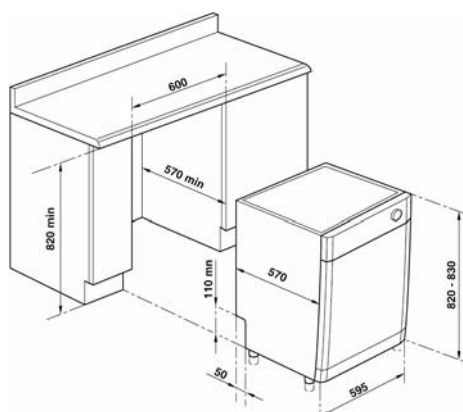
The installation must be "fan-assisted" and the inner diameter of the evacuation conduit must be at least 38 mm. Draining must be performed at a height comprised between 28 and 100 cm from the floor.

The draining pipe (1.5m) can be extended up to 3 metres maximum.

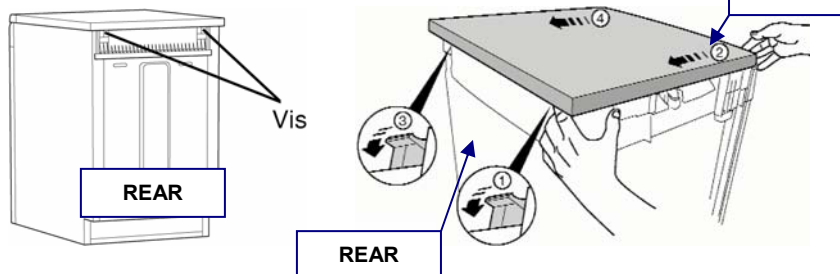
Attention must be paid for the pipe not to be pinched or elbowed, which may happen when the dishwasher is built-in.



### 6.1.5. - Installing under working surface



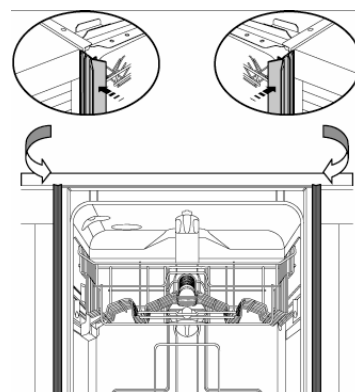
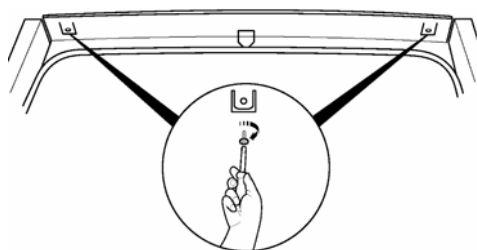
It is possible to slide the dishwasher under a working surface after removing the top as follows:



Install the soundproofing flap (delivered together with the dishwasher) after adjusting its height (by cutting it) so that it touches the floor.

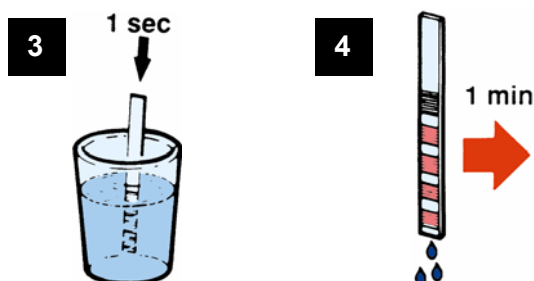
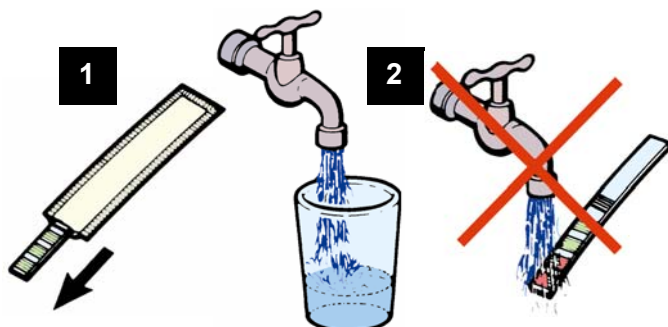
Other soundproofing gaskets are also provided to be stuck between the appliance and the working surface or contiguous pieces of furniture.

Once it is level, screw the appliance front bracket in the working surface.



## 6.2. - Adjusting the regeneration

The factory adjustment corresponds to tap water hardness comprised between 40 and 55°F (or °TH).



If the hardness is different, then it is necessary to correct the regeneration adjustment, in order to obtain washing without traces.

For this purpose, use the test strip delivered together with the detergent sample or the dishwasher, consult the table below and follow the setting procedure described in the dishwasher manual.

Strip	Water Hardness	Use of 3-in-1	Salt Required	Softener Setting
	0 - 10°F	YES	NO	c0
		NO	NO	c0
	10 °F à 25°F	YES	NO	c1
		NO	YES	c1
	25 - 40°F	YES	NO	c2
		NO	YES	c2
	40 - 55°F	X	YES	c3
		X	YES	c4
	55 - 70°F	X	YES	c4
		X	YES	c5
	> 70°F	X	YES	c5
		X	YES	c5

**Caution:** the measurement scale can be different from one strip trademark to another

100 strips: 43X9782

3 strips: 43X9783

Small measurement box: 74X0826

Large measurement box: 31X4037

## 6.3. - Filling the salt tank

If necessary and depending on the hardness or the type of detergent used, fill the salt tank (using the supplied funnel) with special dishwasher regenerating salt. Top up with water up to the tank edge on the first use.

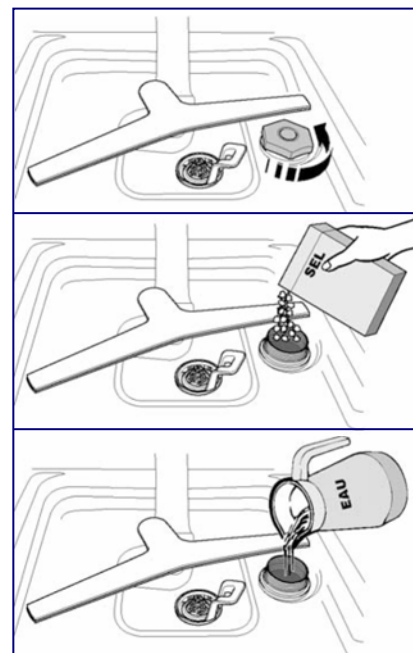
In the case where it is not necessary to use salt (hardness < 10°F or use of detergent integrating the salt action), it is however necessary to entirely fill the tank with water on the first appliance commissioning.

Pick up the salt grains fallen in the tub, and if necessary perform soaking to rinse the tub.

Perform filling again, if necessary, each time the information of salt lack appears on the strip.

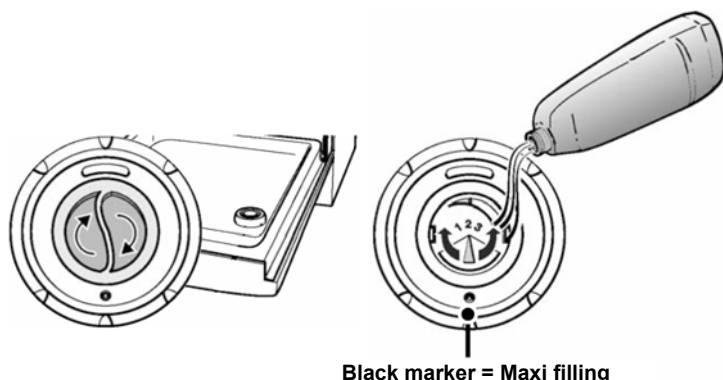
After a new filling, the "Salt lack" indication may remain illuminated until salt has entirely dissolved.

It is possible to deactivate the salt level indication (use of 3-in-1 detergent or softener set to 0).





## 6.4. - Filling the tank with rinsing agent



Fill the tank located in the inner door, each time the product lack information appears on the strip. Wipe the possible overflows to avoid foam effect during next cycle.

Adjust, if needed, the distributed dose according to the drying result obtained after the first cycles. Increment the adjustment (position 2 on manufacture) if the drying result is not correct.

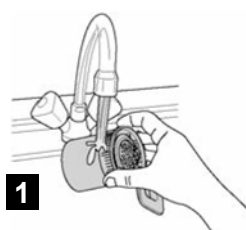
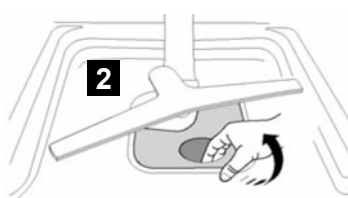
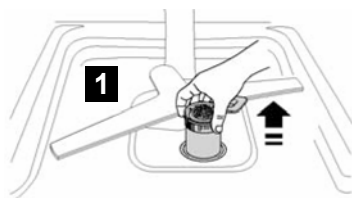
It is possible to deactivate the indication of rinsing agent level (use of 3-in-1 detergent with hardness < 40°TH).

## 6.5. - Filtering and cleaning

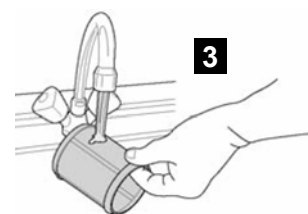
Filtering is performed in suction (European standard). So, it is efficient throughout the cycle.

Four filtration levels are ensured through:

- A waste filter with 2 filtration levels (turn it by 1/4 turn to unlock it) **1**
  - a conical section in plastic (non removable) to recover big waste
  - a cylindrical section in plastic, which lets thinner waste go through
- A main filter in stainless steel **2**
- A micro filter in Nylon or stainless steel **3**



All the filters are very easily removable by the user for cleaning.



Some models offer in addition a specific cleaning cycle named "AQUACLEAN", which is recommended to carry out approximately every 3 months, with special dishwasher cleaning agent.



## **6.6. - Deferred Start or End**

### **6.6.1. - Deferred start or end**

It is possible to start a cycle in "Deferred start" or "Deferred end" depending on the dishwasher programming level.

- **E1 programming:** "Deferred start" by 3, 6 or 9 hours
- **E2 programming:** "Deferred start" from 1 to 12 hours
- **E4 and E5 programming:** "End-of-cycle" time

## 6.7. - The programs possible

Type of items:  
- porcelain, pans,  
cutlery, glasses, etc.

Quantity, type and  
amount of food  
residue.

Resistant

Mixed

Mixed

Mixed

Mixed

Mixed

Empty

Very dirty  
large dishes and  
pans, with baked  
on residue,  
grease, cooked  
cheese, sauce,  
etc.

Normally dirty, i.e.  
a normal amount  
of sticky and  
greasy residue.

Short 60-minute  
wash specially  
designed for  
daily washing  
with a limited  
amount of  
slightly sticky  
residue.

Automatic  
detection of the  
amount of  
residue.  
Optimises the  
results and  
prioritises  
energy savings.

Normally dirty, i.e.  
a normal amount  
of sticky and  
greasy residue. A  
longer  
programme  
because it saves  
on energy.

Normally dirty  
Washing at low  
temperature,  
economical and  
particularly  
suitable for  
compact –  
enzymatic  
detergents

Very short 30-  
minute wash  
specially  
designed for a  
small amount of  
daily items with a  
limited amount of  
non-greasy  
residue, not dried  
on

Very short cycle  
(with no  
detergent) for  
rinsing and  
re-dampening the  
items while  
waiting for a  
wash expected  
the following day  
or even the day  
after

Specific  
maintenance  
programme  
accessible by  
pressing the  
**AUTOCLEAN**  
button. Empty  
your machine  
completely and  
remove the  
largest amount of  
residue from your  
filter

Programmes

Programme  
sequence

As an indication  
only:

Average  
duration

BOOST

Normal

OPTI/60 min

AUTO

Eco

Bio

Flash 30'

Pre-wash

AUTOCLEAN

Hot pre-wash

Washing at 70°C

Rinse

Hot rinse

Fan-assisted  
drying

Pre-wash

Washing at 65°C

Rinse

Hot rinse

Fan-assisted  
drying

Pre-wash

Washing at 60°C

Rinse

Hot rinse

Fan-assisted  
drying

Pre-wash

Washing at 55/65°C

Rinse

Hot rinse

Fan-assisted  
drying

Pre-wash

Washing at 55°C

Rinse

Hot rinse

Fan-assisted  
drying

Washing at 50°C

Rinse

Hot rinse

Fan-assisted  
drying

Washing at 45°C

Rinse

Hot rinse at 60°C

Short drying cycle,  
not fan assisted

Cold pre-wash

Degreases and  
de-scales your  
dishwasher's tub,  
thereby maintain-  
ing its efficiency  
and prolonging  
its service life.  
For optimum  
results, use a  
cleaner specially  
designed for your  
dishwasher or,  
failing this,  
powder or a pel-  
let in the prod-  
ucts drawer

130 minutes

90 - 110  
minutes

60 minutes

90 minutes

130 minutes

145 minutes

30 minutes

15 minutes

90 minutes

Standardized  
cycle

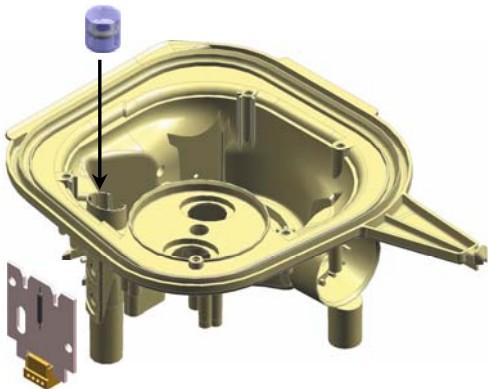
Washing at  
70°C  
2 rinses  
of the  
cycling unit  
Rinse at  
70°C  
+  
cycling  
Natural  
drying

The "3-in-1", option that is used for taking advantage of all the possibilities of these pellets, modifies the run of wash  
cycles (except for the "Flash 30 minutes").  
A second cold rinse is systematically carried out and the temperature of the last hot rinse is also modified in order to  
guarantee the drying.

## 6.8. - Filling the dishwasher

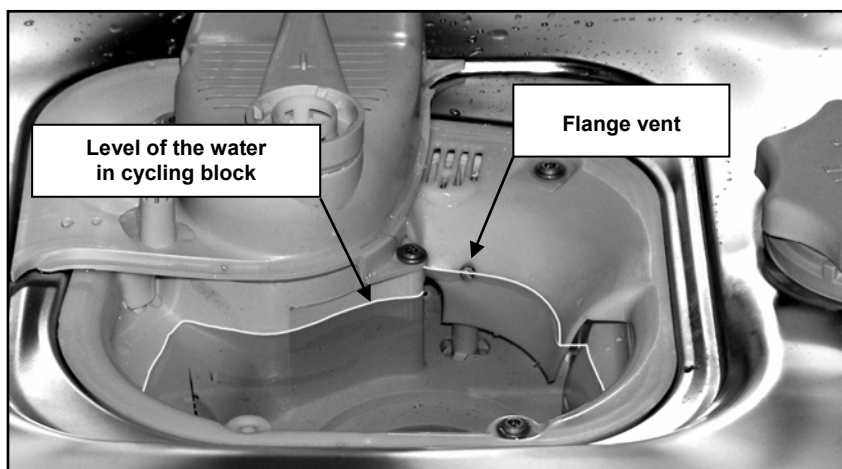
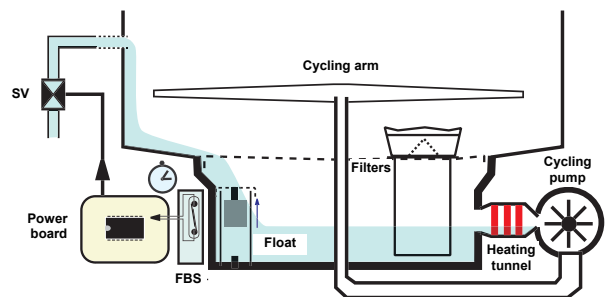
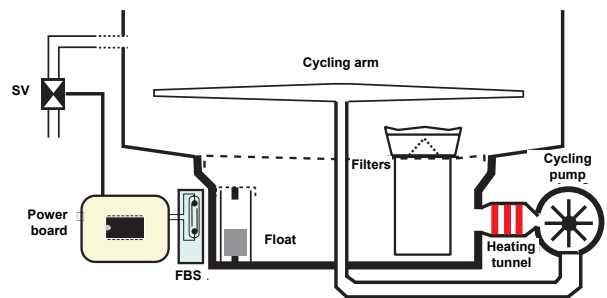
➤ **Check of level (L) by a float**

The beginning of a washing cycle always starts with draining alone down to lowest level plus 10 seconds ( $\rightarrow L0 + 10''$ ).



Next, the valve is supplied and the information on the level state (hydraulic unit empty and then full) is given to the power board by a flexible-blade switch (FBS) attached to the hydraulic unit. A magnetized float located in a well of the hydraulic unit acts on the FBS.

A first filling phase (0.85 litre) is performed statically, that is, without supply to the cycling pump, thus, without rotation of spraying arms.



It is possible to check level L1 in the hydraulic unit.

On the other hand, as next filling phases are linked together, this check can only be performed during the test program (step 4): On completion of the first filling and after removing the filters, the water level is seen at the height of the flange vent located above the temperature probe (N.T.C.).

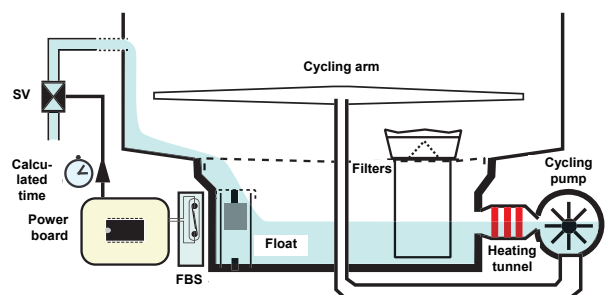
➤ **Measurement of the filling and**

**then topping up time**

During the first filling step, the board measures the duration to reach level L1 (information given by the FBS and the float). According to this duration, the board computes a chronometric filling duration to top up with water.

This second filling step is carried out in a linked way and always without cycling.

Its duration depends on the selected program, the current step, and the type of dishwasher. Therefore, the water level reached after topping up cannot be checked.



### ➤ Measurement of the cycling pump current and keeping of the power supply to solenoid valve

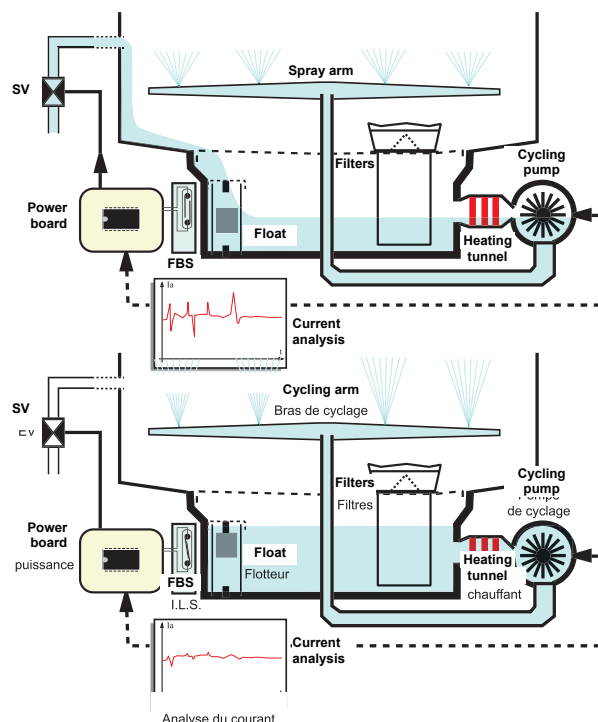
The third and last filling step is carried out dynamically, that is by supplying the cycling pump.

As soon as this pump starts, the various spraying circuits of the appliance fill. The pump starts and due to the lack of water, the current it absorbs varies rapidly.

The valve is supplied until the current consumed by the cycling pump is stabilized. This is used for reaching a level suited to the dishwasher needs at a precise moment (even in case of overturned bowl).

### ➤ Monitoring of the current consumed by the pump

Before definitely cutting off the power supply to solenoid valve, the power board carries on monitoring the current consumed by the cycling pump for the next 5 minutes. This is used for topping up with water again, if need be, in the case of a container that overturns, for example.



This water level management principle is used for having very precise filling perfectly suited to the dishwasher needs (pump and hydraulic circuit, loading and type of dishes, water pressure and inlet flow rate)

### ➤ Safety devices and "security mode" of the filling

#### • Level L1 not reached after 2' approximately:

The board supplies then the cycling pump and checks the current consumed.

- The latter greatly varies, as the hydraulic unit is empty (tap closed, very low flow rate < 0.5 l/min, draining stick fallen)

- ▶ the cycle is stopped

- ▶ the warning light  lights on (fault d01)

- ▶ it is necessary to press the "start" key to restart it

- It is stable as the hydraulic unit is full (no detection as float blocked)

- ▶ the cycle carries on normally and the intake of water continues with the dynamic filling and the monitoring of the current consumed by the pump

#### • Level L1 reached within 15" approximately:

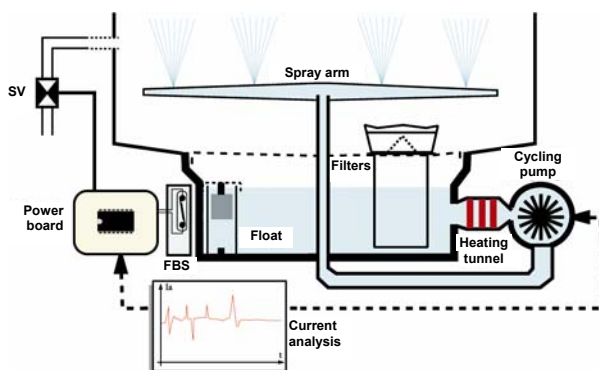
Hydraulic unit not empty at cycle beginning, following incorrect draining

- the current cycle is modified to perform draining alone again to L0 +10"

- this draining will be performed only once before repeating the first filling phase

- **Safety devices and "degraded mode" of the filling (continued)**
  - **Level L1 reached but after 35" approximately: Low tap flow rate (< 1.5 l/min. approximately)**  
**Filling is then performed in "degraded mode":**
    - the solenoid valve is supplied for a few seconds still after detection of level L1
    - pause of 10" approximately and then check of the level
      - ▶ level L1 is still present: the chronometric and static topping up is then set to 1' approximately and the intake of water continues with the dynamic filling while monitoring the current
      - ▶ level L1 is no longer present: leak or draining stick fallen  
the current cycle is stopped and it is necessary to press "start" button to restart it

## 6.9. - The detection of dirt during the cycle



During the cycle, the electronics measures the pump current. In the case of significant dirt, this current varies abnormally (due to the presence of emulsion) an additional rinse is then performed.

## 6.10. - The regeneration

The regeneration (3' of power supply to the regeneration valve) is initiated by the electronics when the latter 'considers' that the resins are saturated.

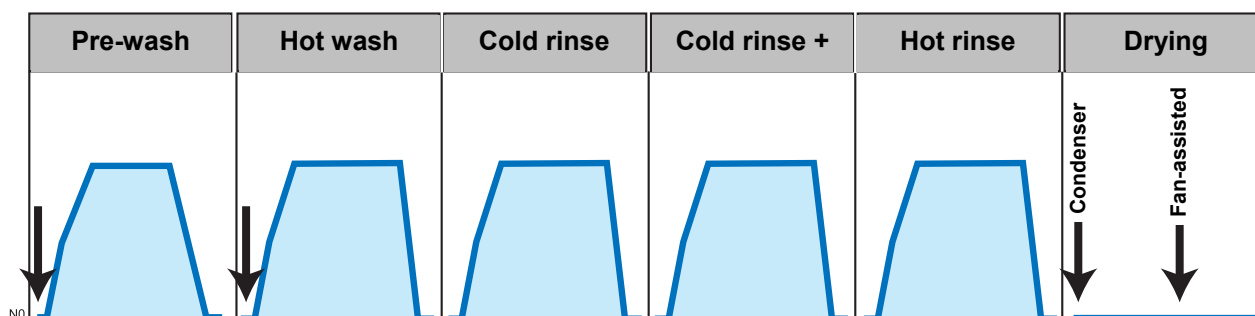
The purpose is to optimize the consumption of water and salt.

It is, therefore, not necessarily performed on each cycle, as its frequency depend on the hardness adjustment, number of fillings carried out and current cycle.

On the other hand, it is mainly performed at the end of cycle during drying (at the beginning of drying for the condenser version – during drying for the fan-assisted version)

**CAUTION:** the regeneration is also possible before the filling of a washing cycle in the case where resins are saturated following many "Soaking" cycles followed by a washing.

### → Possible initiation of the regeneration



#### ➤ Run of the regeneration phase:

- 3' of power supply to the regeneration valve
- emptying of the reserve of hard water designed to push the brine from the salt tank to the resin tank

#### ➤ Run of the resin rinsing phase:

This rinsing phase always takes place at the beginning of the next cycle.

On the other hand, if the regeneration is performed at the beginning of a washing cycle, it is systematically followed by the resin-rinsing phase. This avoids sending resin cleaning residue (salt + accumulated limestone) onto the dishes and being likely to precipitate it onto the latter during the heating.

The resin-rinsing phase always runs as follows:

- Draining down to L0 + 10"
- Power supply to SV1 and filling up to L1 while recording the filling duration (t→L1)
- 20" of pause
- 2 x (Power supply to SV1 for "t→L1" + 20" of pause)
- Draining down to L0 + 10"
- Power supply to SV1 until L1 + chronometric topping up with water (computed with respect to "t→L1").
- Draining down to L0 + 10"

#### ➤ Number of fillings before a regeneration:

The regeneration initiation depends on the adjustment performed on getting the appliance started (factory adjustment to 3: hardness from 40 to 55°TH) but also on the number of fillings (→L1) and not on the number of programs performed.

Water hardness	< 10°TH	10 to 25°TH	25 to 40°TH	40 to 55°TH	55 to 70°TH	> 70°TH
Regeneration adjustment	0	1	2	3	4	5
Number of fillings before regeneration	No regeneration	21	12	9	7	5



## 6.11. - Hydraulic circuit of the technical zones

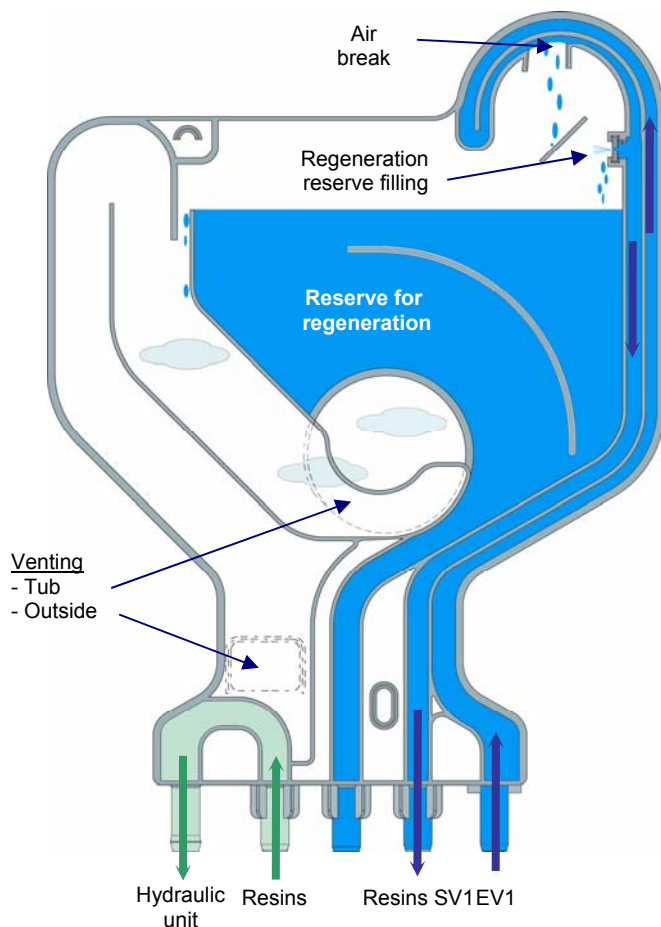
The technical zone performs several functions. Because it is used:

- at the moment of the filling by ensuring water inlet venting (air break).
- at the moment of the regeneration when the reserve of hard water is going down to the salt tank.
- at the moment of the drying in fan-assisted models, by allowing the humid air to condense.

Therefore, two different technical zones exist:

- a small one for models with natural drying and models with drying by condenser
- a large one for models with fan-assisted drying

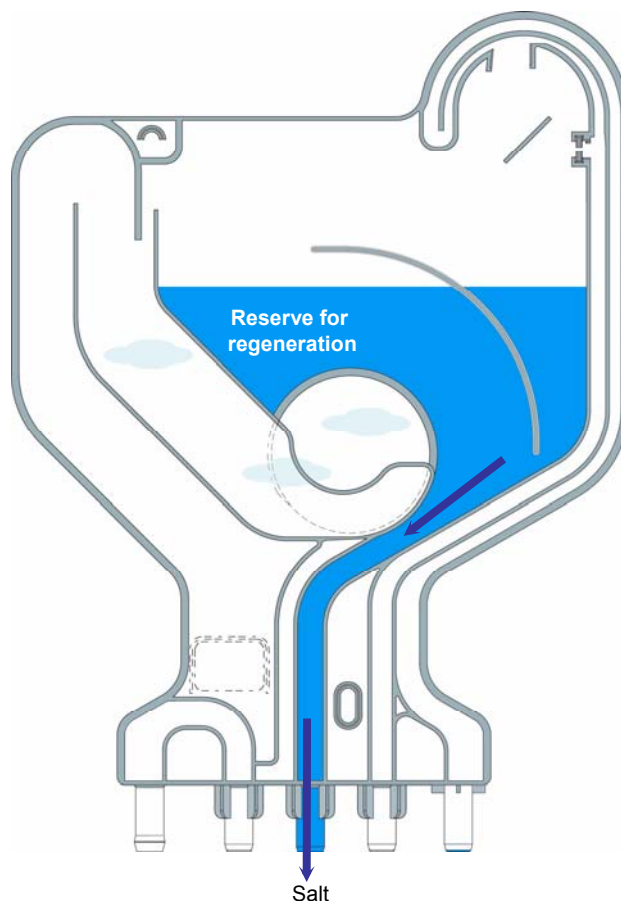
### ➤ The filling of models with small technical zone



The water flowing out of the filling solenoid valve (SV1) flows through a vent ("air break" anti-siphoning) located at the top of the technical zone, before flowing down into resins.

A part of this hard water flows through a calibrated nozzle to fill a reserve intended for the regeneration (this reserve is only full after several air intakes). If there is overflow from this reserve, the overflow flows to the tub through the tub vent. Because, the technical zone is provided with an opening to the outside and ensures thus the tub and air inlet venting.

The softened water flows out of the resins and shortly flows through the technical zone bottom before flowing to the hydraulic unit.

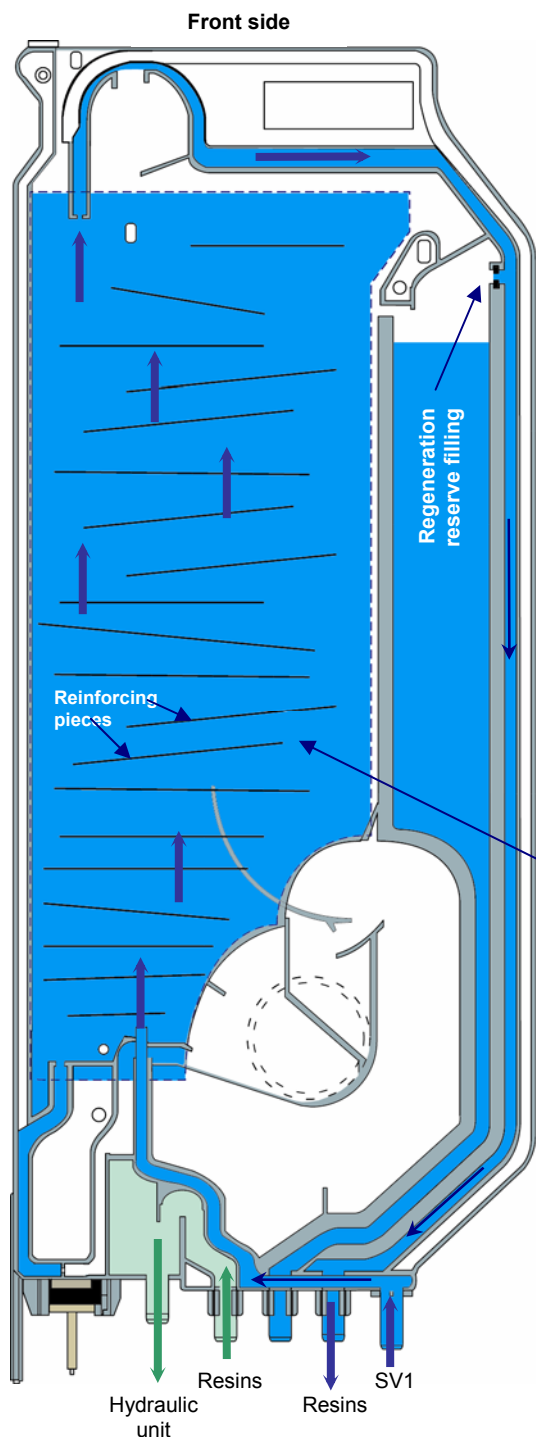


### ➤ The regeneration of models with small technical zone

At the beginning of the regeneration phase, the power board supplies, for 3', the RSV solenoid valve located between the salt tank and the resins.

The reserve of hard water (280 ml), located in the technical zone can then empty and push, by gravity, the brine from the salt tank to the resins.

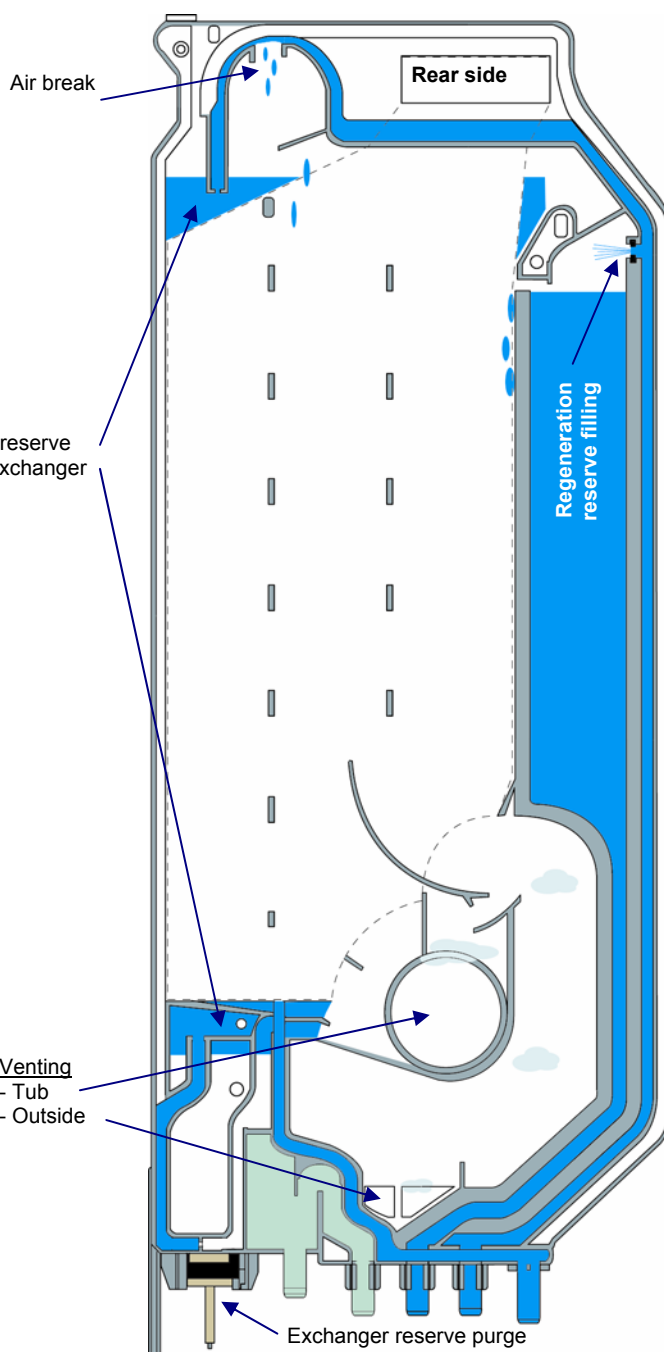
### ➤ The filling of models with large technical zone



The water flowing out of the filling solenoid valve flows through the technical zone bottom, to fill then (from bottom to top) the water reserve of the exchanger (that will be used during the drying).

This reserve is renewed on each filling and always remains full (use a magnet to open the purge located at the bottom, in order to empty the reserve before removing it, for example).

Next, the water flows through the air break located at the top of the technical zone before flowing down into the resins.



A part of the hard water flows through a calibrated nozzle to fill the regeneration reserve (which is only full after several air intakes). If there is overflow from this reserve, the overflow flows to the tub through the tub vent. Because, the technical zone is provided with a port to the tub that is vented through a box located on its left side, so ensuring the tub and air inlet venting. The softened water flows out of the resins, flows through the bottom of the technical zone and flows to the hydraulic unit.

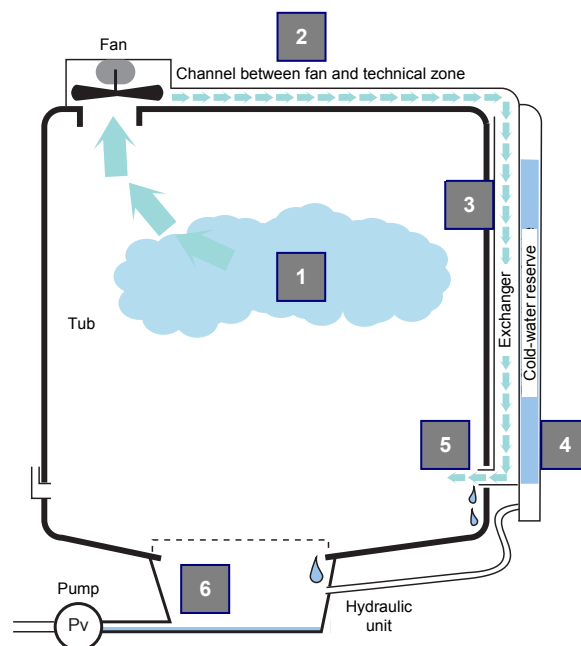
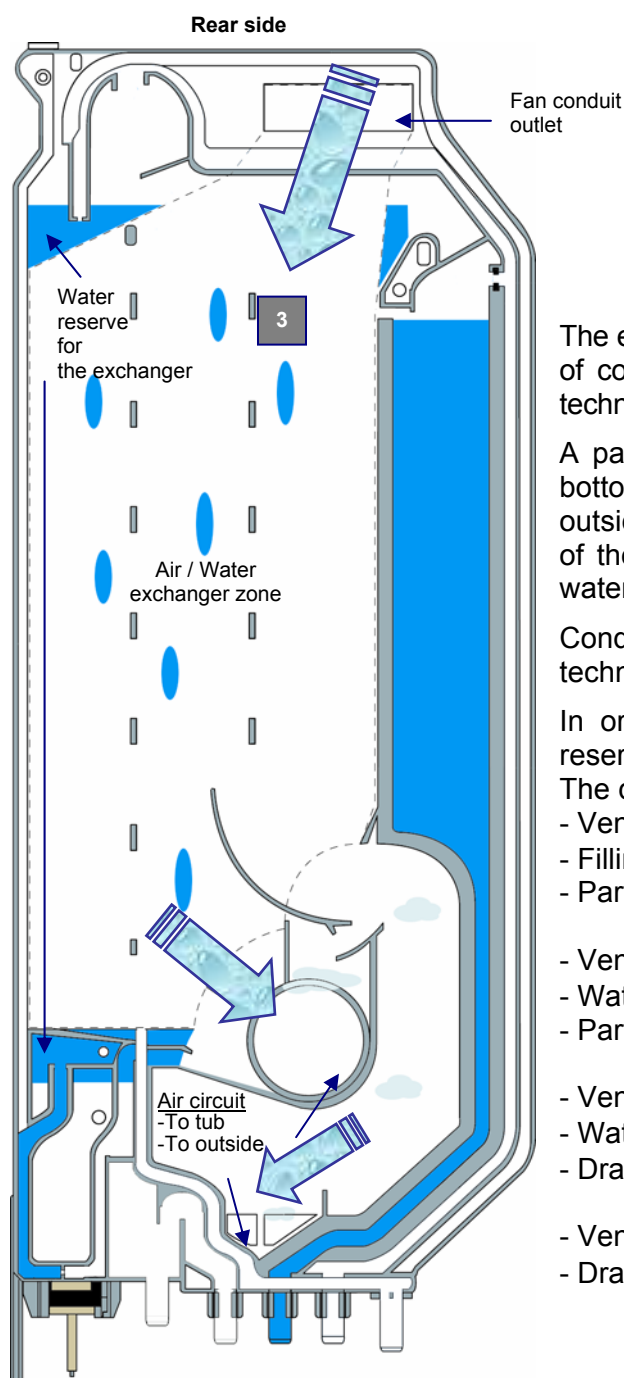


➤ **The fan-assisted drying of models with large technical zone**

During the drying, steam comes out from the dishes that have been heated to at least 65°C during the hot rinse (1).

A fan, located in the tub ceiling, sucks this steam and directs it in a channel tacked on the tub top (2).

The steam goes then down into an exchanger zone located at the rear of the technical zone (3).



The exchanger, gone through by the steam, is cooled by a reserve of cold water (approximately 1 litre) located on the front of the technical zone (4).

A part of the so-dried air returns into the the tub through the bottom of the technical zone (5) and the rest is sent to the outside after going through a box located on the rear right side of the tub. So, it is not abnormal to find some traces of dried water drops on the bottom.

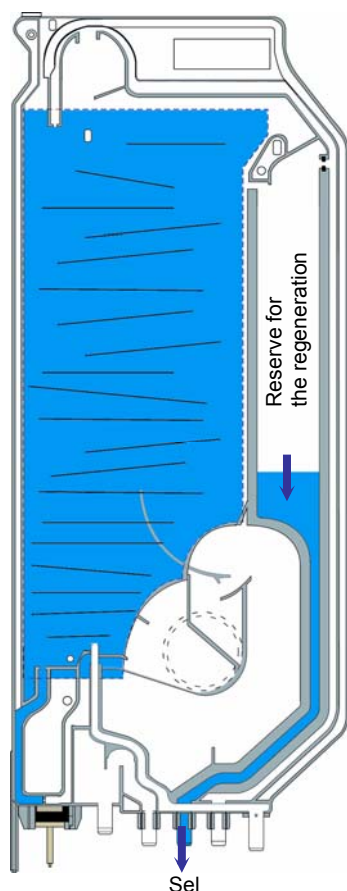
Condensates and the tepid water that was renewed in the technical zone during the drying are drained (6).

In order to improve the condensation in the exchanger, the reserve of cold water is renewed during the drying.

The drying runs as follows:

- Ventilation alone
- Filling →L1 + Ventilation
- Partial draining + Ventilation
- Ventilation alone
- Water topping up →L1 + Ventilation
- Partial draining + Ventilation
- Ventilation alone
- Water topping up →L1 + Ventilation
- Draining →L0
- Ventilation alone
- Draining →L0

➤ The regeneration of models with large technical zone (AAA)



At the beginning of the regeneration phase, the power board feeds, for 3', the RSV solenoid valve located between the salt tank and the resins.

The reserve of hard water (280 ml), located in the technical zone can then empty and push, by gravity, the brine from the salt tank to the resins.

## 6.12. - The three modes of drying

The HERAKLES chassis proposes 3 drying marks (A, B and C) and, therefore, 3 means to obtain them:

- **Mark C**

Natural drying: dishes are rinsed at approximately 70°C and dry by their own.

The water evaporates then thanks to the heat accumulated by the dishes.

It is advisable to half-open the dishwasher door approximately 15 minutes after the end of the cycle.

- **Mark A or B (According to the insulation of the tub)**

Drying by condenser: a solenoid valve (SV2) lets a curtain of cold water flow (consumption variable according to the program) on the right side of the tub during the drying.

Attracted by the cold, the steam is then absorbed and the water is sent to the drain.

- **Mark A**

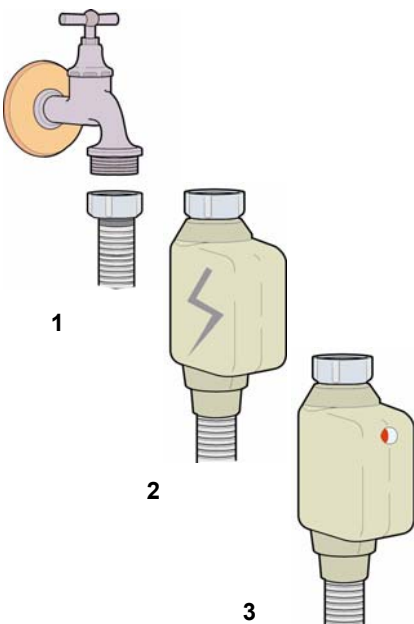
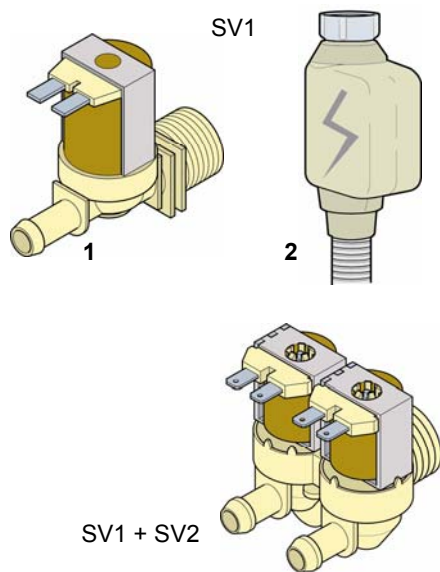
Fan-assisted drying:



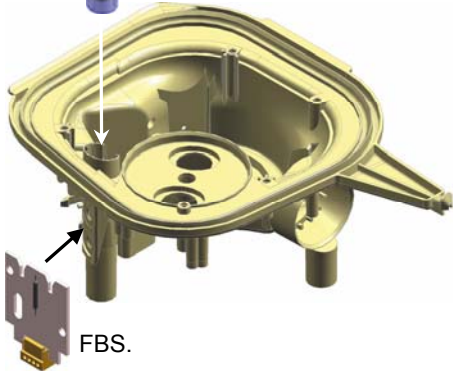
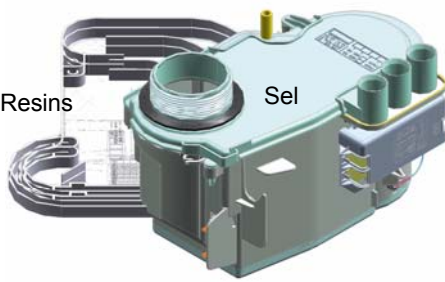
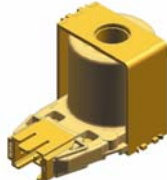
During the drying, steam comes out from dishes and a fan, located in the tub ceiling, sucks this steam and directs it in a channel tacked on the tub top.

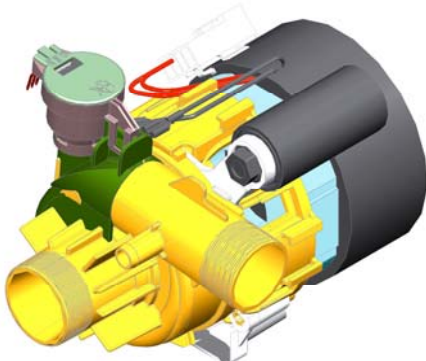


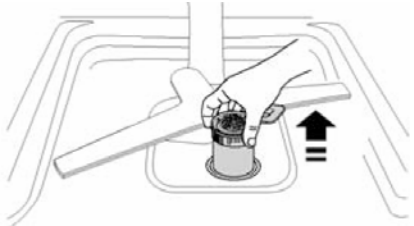
Then, the steam goes down into an exchanger zone located at the rear of the technical zone, which is cooled by a reserve of cold water located at the front.

A part of the dried air returns into the the tub through the bottom of the technical zone and the rest is sent to the outside. Condensates and the tepid water that was renewed in the technical zone are drained.

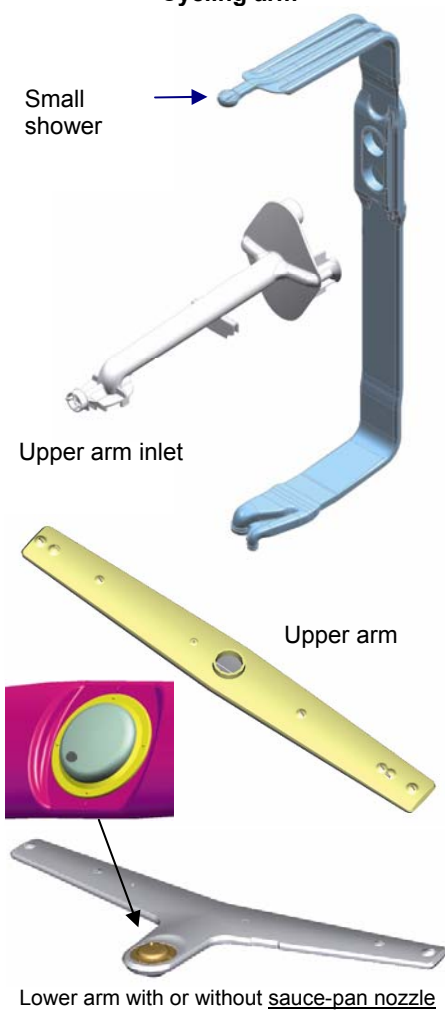
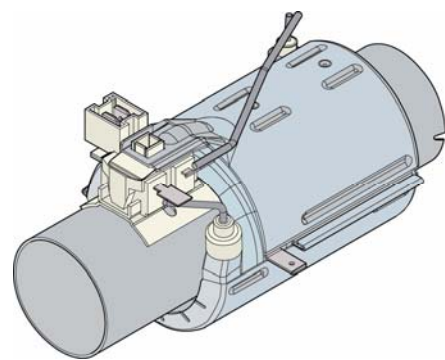
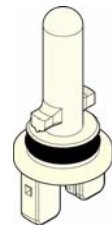
## 7 - THE MAIN COMPONENTS

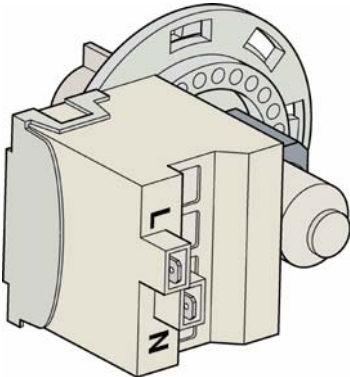



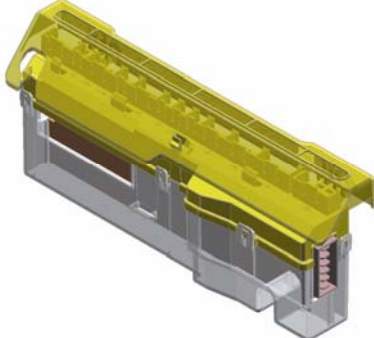

Designation	Function	Features
<p><b>Water inlet pipe</b></p>  <p>1</p> <p>2</p> <p>3</p>	<p>Dishwasher connection to the water network while eventually assuring additional safety.</p>	<p><u>Length</u>: 1.50 m maximum  <u>Tap flow rate</u>: 10l/min. minimum  <u>Threaded fitting diameter</u>: 20/27  <u>Pressure</u>: from 1 to 10 bar  <u>Hot water connection</u>:          65°C maximum if marking on pipe (90°C) and if the model provides for it.</p> <p><b>CAUTION</b>: connection to self-piercing tap possible if opening diameter is 6 mm minimum and the flow rate is sufficient.</p> <ul style="list-style-type: none"> <li>• <b>Simple pipe (1)</b> reinforced or not</li> <li>• <b>Pipe with Aquastop</b>:             <ul style="list-style-type: none"> <li>- <b>Electrical (2)</b>: solenoid valve (EV1) is part of the pipe. So, there are no filling solenoid valves in the chassis.</li> <li>if the sheathed pipe is leaking, the water is directed to the bottom plate, where a contact actuated by a float will cut off the power supply to SV1</li> <li>- <b>Mechanical (3)</b>: a mechanism (actuated by a sponge) blocks the water inlet if the sheathed pipe is leaking. This system is active even with dishwasher powered off</li> </ul> </li> </ul>
<p><b>Solenoid valve</b></p>  <p>SV1</p> <p>1</p> <p>2</p> <p>SV1 + SV2</p>	<p>Is used for filling the dishwasher.</p> <p>If this is a 2-way solenoid valve, one of the solenoid valves will be used for feeding a condenser built in the plastic top of the hub, and which is used on products with drying mark B.</p>	<p><u>Number of ways</u>: 1 or 2 (filling and drying)</p> <p><u>Flow rate</u></p> <ul style="list-style-type: none"> <li>- Wash SV1 in chassis (1): 2.8 l/min approx. (without reducer)</li> <li>- Wash SV1 in pipe (2): 3.5 l/min approx. (without reducer)</li> <li>- Drying (SV2): 0.25 l/min approximately (with green reducer) to feed the "condenser" zone located in the tub ceiling and let a dribble of cold-water flow in order to cool the vapours.</li> </ul> <p>This type of drying increases the water consumption (quantity different according to the cycle)</p> <p><u>Supply voltage</u>: - 230V~ (brown coil)</p> <p><u>Ohmic value</u>: approximately 4 kΩ for the filling solenoid valve</p> <p><u>Operating pressure</u>: from 0.2 to 10 bar</p>

Designation	Function	Features
<b>Technical zone</b> Models with drying by condenser  Models with fan-assisted drying 	<p>Ensures the water distribution for the washing and the regeneration.</p> <p>The one that equips the models with fan-assisted drying also ensures condensation of the steam contained in the tub during the drying.</p>	<p>Distribution of water for fillings with soft water (network to technical zone, and then technical zone to resins and then resins to technical zone and lastly technical zone to cycling unit).</p> <p>Reserve of hard water of the network for the regeneration (technical zone to salt tank).</p>
<b>Hydraulic unit and level management</b>  Float FBS.	<p>The first filling phase is performed without power supply to the cycling pump.</p> <p>A float, located in the cycling unit, actuates the contact of the flexible blade switch (FBS) attached to the unit outside. It gives "high level" information to the printed circuit board.</p> <p>Next, depending on the time taken to reach this "high level", the board feeds the solenoid valve in a chronometric way.</p> <p>The last filling phase is performed by cycling and monitoring the current consumed by the pump. The solenoid valve is cut off when this current is stabilized.</p>	<p>The dishwasher filling is performed by the cycling unit.</p> <p>Because, a hose links the bottom of the technical zone to the hydraulic unit.</p>
<b>Softener assembly</b>  Resins Sel	<p>Assembly consisting of a salt tank and a resin tank linked by a conduit in which a regeneration solenoid valve (RSV) isolating the two tanks.</p> <p>Is used for both retaining the limestone in the resins and cleaning the resins with salt water.</p>	<p><b>Capacities:</b></p> <ul style="list-style-type: none"> <li>- 1.4 Kg of regenerating salt</li> <li>- 0.60 litre of resin</li> </ul> <p><b>Electrical indicator of lack of salt:</b> a magnetized float actuates a flexible blade contact (FBS) that is used to inform the power board. This board will initiate the power supply to an indicator light located on the access board.</p> <p><b>Filling:</b> Only use special dishwasher salt (purified). The softener is compatible with the table salt.</p>
<b>Regeneration solenoid valve (RSV)</b> 	<p>Is used for the regeneration by allowing the brine passage from salt tank through resins. The brine is pushed, by gravity, by the reserve of hard water of the technical zone.</p>	<p><b>Supply voltage:</b> 230V~</p> <p><b>Ohmic value:</b> approximately 4 kΩ</p> <p><b>Supply time:</b> 3 minutes</p>

Designation	Function	Features
<b>Cycling pumps</b> 	<p>Send the pressurized water into the two spraying winches, the saucepan nozzle and the ceiling small shower.</p> <p>The pump is suspended and attached to a silent block to eliminate the noise. The sealed links between the pump, the flap valve or dummy flap valve and the heating tunnel also are flexible to attenuate vibration noises. They are as short as possible to limit dead volumes and the heat dispersion.</p> <p>The spiral shell is used to reduce this volume, better canalize the water and thus limit noises and risks of draining (synchronous pumps). Because the air is directly directed to the arms and venting the pumps is thus not necessary.</p> <p>The electronics measures the variations in the current consumed by the pump, in order to precisely adjust the quantity of water taken during fillings according to the needs of the moment.</p>	<p>Turbine with curved blades, so with mandatory direction of rotation.</p> <p><u>Motor</u>: asynchronous  <u>Main winding</u>: 94Ω  <u>Auxiliary winding</u>: 126Ω  <u>Power</u>: 100W  <u>Thermal protection</u>: internal  <u>Capacitor</u>: 2.5 μF</p>
<b>Micro-motor + Alternate spraying disk assembly</b> 	<p><b>Motorized disk</b>: Direct the water from cycling pump to lower and intermediate winches and to the saucepan nozzle and the ceiling small shower, using a disk drilled with several holes.</p>	<p><b>Motorized disk</b>: (on certain models) A disk drilled with several holes of different diameters is driven by a synchronous micro-motor (piloted by the power board). This system is used for having alternate water supply to arms, nozzle and small shower.</p> <p>A contact located in the flap valve enables the electronics to check the disk position (5 closings/revolution) and a ratchet prevents it from rotating in the wrong direction.</p> <p><u>Micro-motor ohmic value</u>: 6.5 kΩ  <u>Positioning contact</u> verifiable with ohmmeter, 0Ω between 5 and 6 of J5.</p>
<b>Filtering assembly</b> 	<p>Ensure complete water recycling with 4 filtering levels to trap all the dirt, even the tiniest.</p> <ul style="list-style-type: none"> <li>- main filter in stainless steel (1)</li> <li>- plastic waste filter in 2 parts that cannot be dismantled (2 + 3)</li> <li>- micro-filter in nylon or stainless steel (4)</li> </ul> <p>The tub water is filtered throughout the cycle and the entire bath flows through the filters several times per minute.</p> <p>On some LCD programming, the "Filt" message appears on the display after 20 cycles. It is then necessary to clean all the filters.</p>	<p>Located under the lower basket, they are easily accessible and removable by the consumer, for cleaning (eventually check and clean the filter for big waste after each washing). Suction filtering to reduce the water consumption with respect to a pulsed filter.</p> 



Designation	Function	Features
<p><b>Cycling arm</b></p>  <p>Small shower</p> <p>Upper arm inlet</p> <p>Upper arm</p> <p>Lower arm with or without <u>sauce-pan nozzle</u></p>	<p>Various spraying levels are used for projecting the detergent solution onto the dishes.</p>	<p>The lower and intermediate winches rotate simultaneously or not (alternate spraying) under the action of the pressure of the water flowing out of spray nozzles (ports of special shape oriented in a certain way).</p> <p><u>The ceiling small shower</u>: fixed, is used for cleaning the upper section of the tub.</p> <p><u>The lower winch</u>: waters the main filter to push the waste to the waste filter and waters dishes in the lower basket.</p> <p><u>The saucepan nozzle</u>, which is fitted to certain models is associated with a specific program (Cyclone – Sauce-pans). It is eccentric with respect to the lower-arm centre and delivers a rotating jet.</p> <p><u>The intermediate winch</u> and its arm inlet and also the product box are attached to the upper basket.</p> <p>The 2 winches are easily removable by the consumer (for servicing) from the inside of the tub.</p> <p><b>Caution</b> : do not invert winches between models with or without alternate spraying with those of the previous chassis.</p>
<p><b>Heating tunnel</b></p> 	<p>Ensures heating of the detergent bath for the wash and of water with the rinsing product before drying.</p>	<p>Located out of tub (not visible), out of bath (no clogging risks) and out of the cycling unit (safety), it is fitted between the hydraulic unit and the cycling pump suction.</p> <p>So, it requires less water and ensures faster temperature rise than a system with immersion heater.</p> <ul style="list-style-type: none"> <li>• 220 / 240 V~</li> <li>• 2040 W</li> <li>• 25 Ω</li> <li>• Self-resetting 98°C safety thermostat (built-in)</li> <li>• Thermal fuse at 140°C (built-in)</li> </ul>
<p><b>NTC</b></p> 	<p>Inform the power board microprocessor on the detergent bath temperature.</p>	<p>Its ohmic value decreases if the temperature increases.</p> <p><u>Ohmic value at 25°C</u>: approx. 47 kΩ.</p> <p>¼-turn rise and at vertical under the hydraulic unit, it is above the level of the water that may stay in the unit after draining. An O-ring ensures sealing with respect to the unit.</p>

Designation	Function	Features
<b>Draining pump</b> 	<p>Evacuate waste waters and waste whose size is smaller than the waste filter mesh.</p> <p>It is fed from the power board continuously or in fractions.</p> <p>It is directly assembled to the cycling unit and is located under level of water in the cycling unit.</p> <p>The horizontal turbine and a small-diameter hole between the unit and the pump facilitates its degassing and limits the noise.</p>  <p>A check valve is placed in the in the draining conduit of the cycling unit.</p>	<p>Synchronous motor with internal thermal safety device.</p> <p><u>Supply voltage</u>: 230V~</p> <p><u>Power</u>: approximately 30 W</p> <p><u>Flow rate</u>: approximately 15 litres/minute</p> <p><u>Ohmic value</u>: 260Ω.</p> <p>It is installed quarter-turn on the cycling unit.</p> <p>To prevent it from moving during the appliance transport, a plastic clip (accessible under the pump) holds it locked on the cycling unit.</p>
<b>Fan</b>  <p>Drying conduit</p> 	<p>Allow drying the dishes in models with mark A as drying result.</p> <p>A plastic conduit is used for directing the airflow to the "exchanger" part of the technical zone of models with fan-assisted drying. It is located on the plastic top of the tub.</p> <p>Products with drying mark B have a small technical zone and a solenoid valve connected to a condenser built in the plastic top of the tub.</p>	<p>Its sucks the humid air from the tub and then pushes it into the "exchanger" part of the technical zone before returning it into the tub.</p> <p><b>Fan:</b></p> <p><u>Supply voltage</u>: 230V~</p> <p><u>Ohmic value</u>: 400Ω.</p> <p>The complete fan is located in the plastic top of the dishwasher tub.</p> <p>The fan is also fed for a few seconds on each draining in order to expel the residual water.</p>
<b>Power board</b> 	<p>It receives information from the access board and sensors, feeds the power components and also the access board and then it returns information to the user via the access board.</p> <p>This is the power board, which stores the programs in memory.</p>	<p>It is located behind a sheet metal crosspiece that is accessible after removing the clipped plinth of the dishwasher.</p>
<b>Selector and display board</b> 	<p>It transmits to the power board the user's choices and receives from this board the information to be displayed.</p>	<p>The selection board and display board assembly is located behind the strip.</p>

## 8 - MAINTENANCE

### 8.1. - The test program

This complete test program is used for checking all the dishwasher functions.

- **Displaying of faults during the test.:** some fault codes may not appear during cycle. On the other hand, they will be displayed, for the technician, during the TEST

During the test., the way in which one of the LEDs is used indicates the dishwasher status:

☆ : LED flashing slowly (0.5" / 0.5") → waiting for servocontrol (level, T° ...)

● : LED steady → servocontrol reached or status correct (step "OK")

\* : LED flashing rapidly (0.1" / 0.1") → fault detected

- **Display with LCD or digits:** codes displayed in clear on the LCD (E4 - E5) or the 3 digits (E2).
- **Display with LEDs:** on the programming without display (E1), fault codes are indicated using LEDs (vertical or horizontal depending on the strip aesthetics).

To know the fault number, you have just to add the binary weight of the LEDs illuminated.

The weight of a LED is the binary value that corresponds to its position: for example ① ② ④ ⑧ = 15

FAULT "CODE"		FUNCTIONS AND/OR ELEMENTS TO BE CHECKED
LEDs (E1)	Display (E2 -E4 - E5)	
①○○○	801	Filling >>> No High Level after 2' of supply to SV → Check SV and Level FBS
○○②○○	802	Draining >>> No Low Level after 30" of draining → Check Pump and Level FBS
①②○○	803	Heating >>> No heating → Check Heating tunnel and door Safety device
○○④○	804	Thermistor (NTC) ○○○ or disconnected >>> Check its value (47 KΩ at 25°C)
①○④○	805	Current consumed by the cycling pump too low >>> Pump cut or disconnected
○○②④○	806	Current consumed by the cycling pump too high >>> Pump blocked or ○○○
①②④○	807	Leak detection >>> Abnormal presence of water in the chassis bottom + float contact
○○○⑧	808	Alternation valve fault >>> Micro-motor or position sensor ○○○
①○○⑧	809	Not used
○○②⑧	810	
①②○⑧	811	Not used to date (Fault of the cycling pump pressure sensor)
○○④⑧	812	Filling >>> High Level lost during the static filling → Draining pipe on floor
①○④⑧	813	Overheating >>> T° read by the NTC too high → Heating relay closed or NTC ○○○
○○②④⑧	814	Filling >>> Cycling pump current not stabilized → Wrong level or pump ○○○

- **Transition to next step** by actuating " Start ⏻ " button. It is thus possible to skip steps (except those where it is necessary to wait for level or temperature servocontrol).
- **Checks possible during the test:** The board stores thee latest test data, which allows opening the door (level check) or disconnecting the appliance to check the defective circuit, replace the defective part then connect the product and continue the test
- **Cancellation and exit from the test:** a dishwasher de-energization or actuation of the " On/Off " button does not cancel the current test





It is thus necessary to hold the " Start ⏻ " button down for 2" to exit the test

- **Preliminary steps and conditions to enter the test**

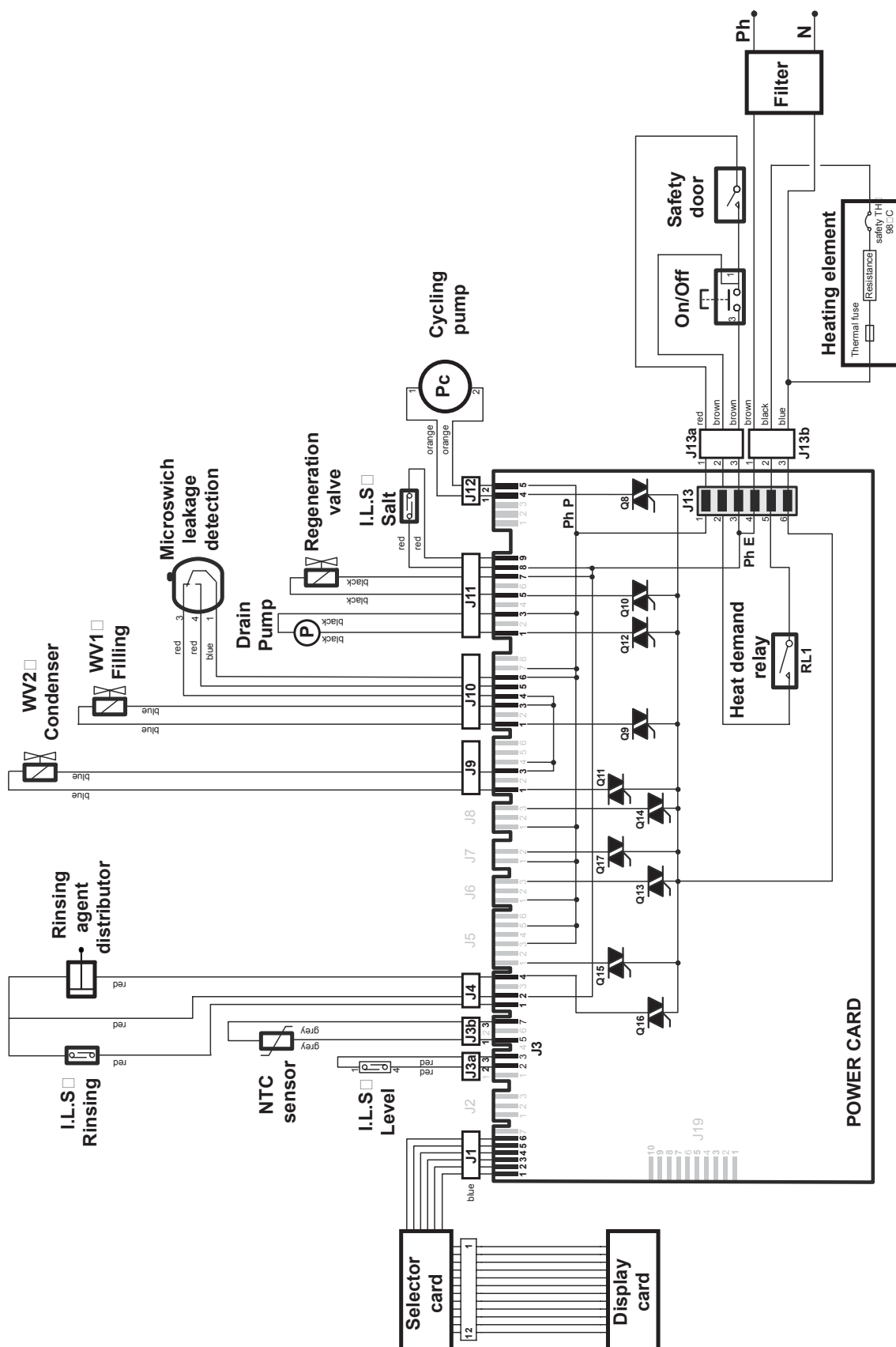
- Remove the plinth and the front crosspiece to gain access to the aid-to-diagnostic leaflet
- Remove the right-hand panel to see the emptying of the water reserve intended for the regeneration
- Use a clamp-on probe to check the power supply to heating element
- Empty the appliance, open the tap and close the door of the dishwasher



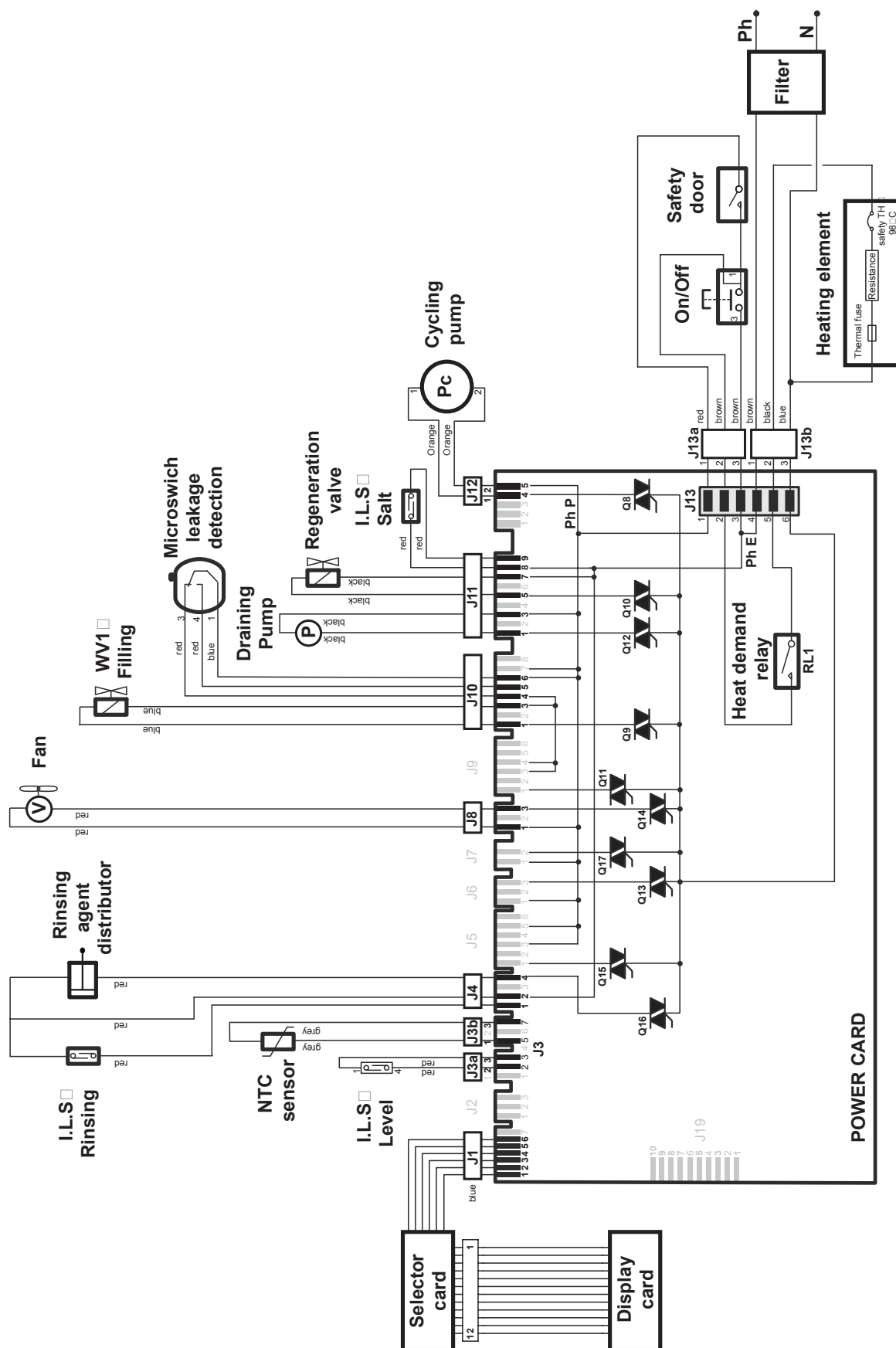
Action	Step	Run and display	Analysis / Display	
5 actuations of "Start" (→) in less than 5" (and hold the down on certain models)	0	<b>TEST start</b>	<b>Signalling system of all the LEDs Illumination of the display segment + BEEP ?</b>	
			NO	The test has not started.
			YES	Nothing to signal.
Actuation of "Start" (→)	1	<b>Check of access</b> Each button actuation or the selector rotation modifies the display.	<b>A single LED illuminates at a time ? Display modification on each actuation ?</b>	
			NO	Access board out of order.
			YES	Nothing to signal.
Actuation of "Start" (→)	2	<b>Check of NTC</b> Check of the thermistance (47 KΩ at 25°C)	<b>★ A LED flashes rapidly 804 is displayed</b>	N.T.C. out of order
			<b>● A LED is steady or "OK"</b>	
			Nothing to signal.	
Actuation of "Start" (→)	3	<b>Check of draining pump + Condenser SV2 (if present) + Fan (if present)</b> Check the power supply to SV2 and to fan, if present.  Impossible to continue the TEST if the level remains full.	<b>Low level (N0) reached before 30" ?</b> ★ a LED flashes slowly or "IN PROGRESS" if high level (N1) and then ● this LED becomes steady or "OK" if low level (N0).	
			NO + ★ and/or 802	- Level FBS shorted - Float blocked up - Draining pump OOO
			YES	Nothing to signal.
Actuation of "Start" (→)	4	<b>Check of filling (SV1)</b>  Impossible to continue the TEST if the level remains low.	<b>Filling and high level (N1 reached before 3' ?</b> ★ a LED flashes slowly or "IN PROGRESS" if low level (N0) and then ● this LED becomes steady or "OK" if high level (N1) and then - Filling stop.	
			NO + ★ and/or 808	- Level FBS cut - Float blocked down - SV1 OOO
			YES	Nothing to signal.
Actuation of "Start" (→)	5	<b>Check of cycling + Alternate spraying (if present)</b>  If the alternate spraying is present, arms are fed with water, as follows: - 5" on the top winch - alternation between top and bottom the bas - 5" on the bottom winch - alternation between bottom and top - ...  The transparent door 32X2668 allows checking the right rotation of winches.	<b>Winches rotate correctly ?</b> ● a LED becomes steady or "OK" ? - Power supply to SV1 (water topping up) - Power supply to the cycling pump - Power supply to alternate spraying micro-motor (if present)	
			NO	Arms clogged or blocked
			NO + ★	- Cycling pump OOO - Alternate spraying valve OOO (position contact or micro-motor)
			805 or 806	Cycling pump OOO
			808	Alternate spraying valve OOO
			YES	Nothing to signal
Actuation of "Start" (→)	6	<b>Check of heating + cycling + Alternate spraying (if present)</b>  During the heating, the current consumed is 9 A.	<b>+ 5°C after 5' of heating ?</b> ★ a LED flashes slowly or "IN PROGRESS" during heating and then ● this LED becomes steady or "OK" if the T° has increased and then - Heating stop.	
			NO + ★ and/or 803	Heating tunnel OOO
			YES	Nothing to signal.
			YES	Nothing to signal.

Action	Step	Run and display	Analysis
Actuation of "Start" 	7	<b>Check of the regeneration valve (RV)</b>	<b>The reserve of the technical zone is emptying ?</b>
		Remove the right-hand panel to see the regeneration reserve emptying.	<b>NO</b>   Regeneration valve out of order
Actuation of "Start" 	8	<b>Check of the rinsing product intake</b>	<b>Product flows along the inner door ?</b>
		Wait 1 minute for the actuator to act and then open the dishwasher door.	<b>NO</b>   Rinsing box actuator OOO or box empty.
			<b>YES</b>   Nothing to signal.
Actuation of "Start" 	9	<b>Check of the draining pump</b> + Condenser SV2 (if present) + Fan (if present)	<b>10'' of cycling (inner-door rinse) and then draining Low level (L0) reached before 30''?</b>
		Check the power supply to SV2 and to fan, if present.	★ a LED flashes slowly or "IN PROGRESS" if high level (N1) and then ● this LED becomes steady or "OK" if low level (L0).
			<b>NO</b> + ★ and/or 802 - Level FBS shorted - Float blocked up - Draining pump out of order
			<b>YES</b>   Nothing to signal.
Actuation of "Start"  or Actuation of On/Off or Mains cut	10	Exit from the TEST	

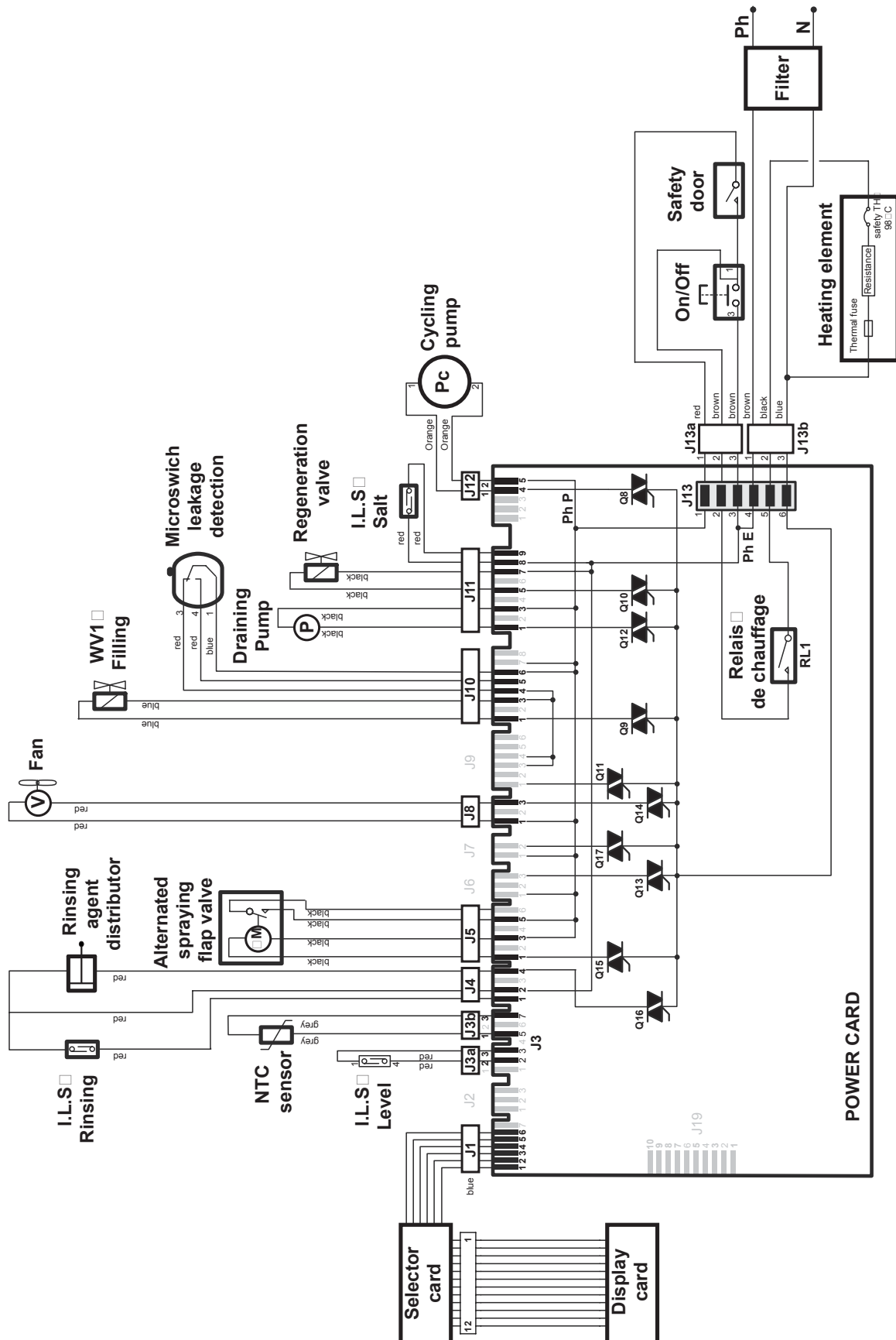
**8.2. - Diagram of a model with simultaneous spraying and drying by condenser**



### 8.3. - Diagram of a model with simultaneous spraying and fan-assisted drying



**8.4. - Diagram of a model with alternate spraying and fan-assisted drying**

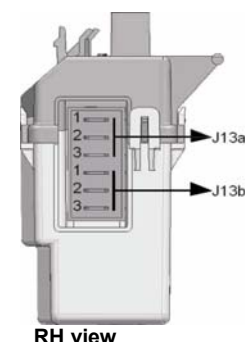


## 8.5. - Checks and measurements at the power board terminals

The dishwasher power board is installed in casing located on the left in the chassis bottom. To test the dishwasher components, using an ohmmeter, you have just to remove the plinth and the front crosspiece and then pull the casing forwards.

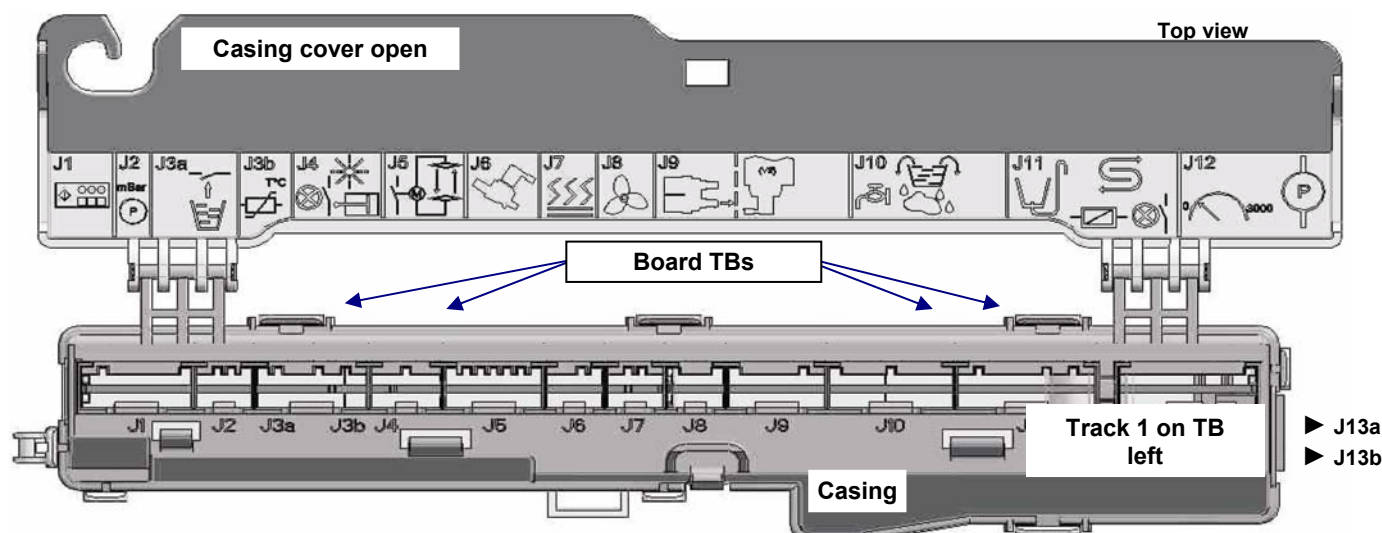
All the measurements made in the connectors disconnected from the power board, are used for checking the component and its wiring.

The power board is protected by a plastic package on which the names of terminal blocks are screen printed, as well as a symbol representing the component connected.



RH view

Top view



A manual, placed nearby, allows to have at disposal the test program and also a table with the values of components and the terminals to which they are connected.

Elements	Terminal blocks		Value	Information
Thermistor (NTC)	J3b/1	J3b/3	Approx. 47 k $\Omega$	Value at 25°C
Heating tunnel	J13b/2	J13b/3	Approx. 25 $\Omega$	-
Draining pump	J11/1	J11/3	Approx. 260 $\Omega$	-
Level FBS	J3a/2	J3a/3	Infinite	Tub empty
			0 $\Omega$	L1 (0.85 litre) reached
Condenser drying SV2	J9/1	J9/3	Approx. 4 k $\Omega$	-
Fan	J8/1	J8/3	Approx. 400 $\Omega$	Fan-assisted drying
Filling SV1	J10/1	J10/3	Approx. 4 k $\Omega$	-
Cycling pump	J12/4	J12/5	Approx. 100 $\Omega$	-
Alternate spraying motor	J5/1	J5/3	Approx. 6,5 k $\Omega$	-
Valve position contact	J5/5	J5/6	0 $\Omega$ or infini	5 closings per revolution
Regeneration SV	J11/5	J11/7	Approx. 4 k $\Omega$	-
Salt FBS	J11/8	J11/9	Infinite	Tank full
			0 $\Omega$	Tank empty
Rinsing box actuator	J4/2	J4/4	Approx. 1,5 k $\Omega$	-
Rinsing product FBS	J4/1	J4/2	Infinite	Tank full
			0 $\Omega$	Tank empty
Anti-leak float contact	J10/4	J10/6	0 $\Omega$	Nothing to signal
	J10/5	J10/6	0 $\Omega$	Leak
Door contact	J13a/1	J13a/2	0 $\Omega$	Door closed
			Infinite	Door open
On/Off button	J13a/2	J13a/3	0 $\Omega$	Button pressed (ON)
			Infinite	Button pressed (OFF)
Electrical power supply	J13b/1	J13b/3	230 V	-

Measure with ohmmeter, in disconnected connectors and de-energized product.





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